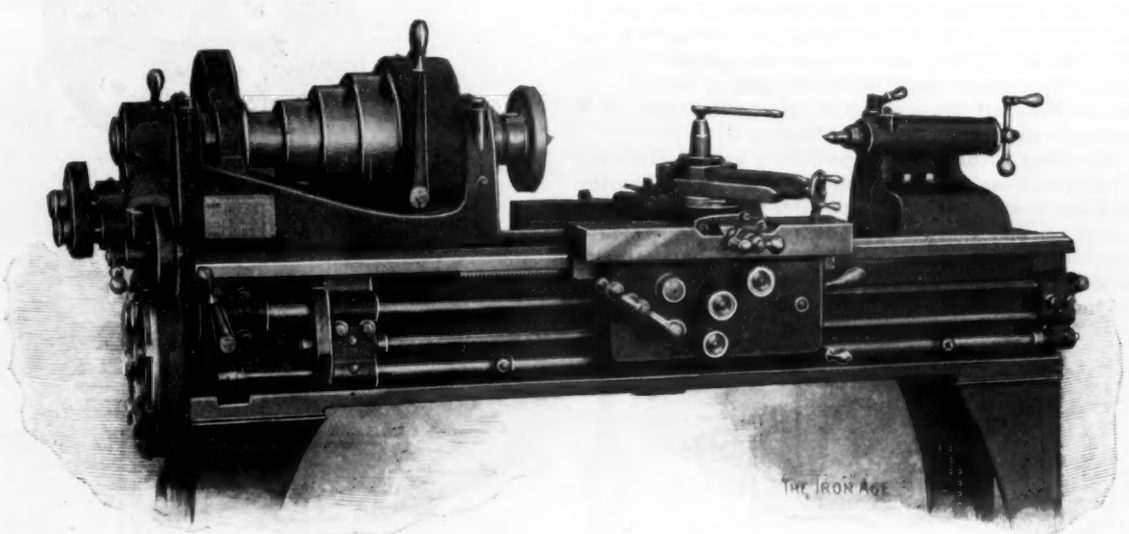
THE IRON AGE

THURSDAY, OCTOBER 17, 1901.

The New Ideal Engine Lathe.

The new 16-inch engine lathe designed and built by the Springfield Machine Tool Company of Springfield, Ohio, is equipped with such mechanism as will permit the making of all changes necessary for a wide range of feeds and screw cutting without removing any parts held by nuts or washers. Of the gears used only those are running which are necessary to transmit motion from the spindle to the lead screw, and although reverse gears have been added to the head stock only seven gears transmit motion when a right hand thread and eight when a left-hand thread is being cut. All the change gears which are required on the lead screw have hubs extending on one side and revolve freely in bearings placed concentric in a disk, as shown in Figs. 2 and 7. This disk is large enough in diameter to serve the purpose of a gear guard, since none of the gears, of which there are eight, is visible. The disk revolves on a stud secured to a case suspended from the front lead screw box. By revolving the disk any of the gears, which are independent of each other, can be brought in line with the lead screw. The lead screw itself has a telescopically arranged extension controlled by a lever. This extension is reduced at its end to enter the hole in a change gear a distance equal to its thickness before the clutches with which the change gears and extension are fitted come in contact with each other. Thus when one of the change gears is connected with the lead screw it ceases to depend upon the disk for support, but is mounted on the lead screw as substantially as if secured to it by a nut and washer.



THE NEW IDEAL ENGINE LATHE.

Since a sufficient range of feeds or screw pitches cannot be obtained by changing the gears on the lead screw alone provision is made at the head stock for various ratios of speed. This is accomplished by means of three pairs of gears, which give five different ratios of speed for the fixed pinion, which meshes with the intermediate gear, which transmits motion to the gear on the lead screw.

The gears contained in these cases are similar to those of the disk and are placed in position by slipping them on the reduced ends of the spindles provided with clutches to engage them, and when in position for operation are really supported by the spindles, instead of the cases, whose only object is to facilitate handling and provide suitable guards. Inasmuch as only one pair of gears can be used at a time a receptacle is formed in the leg of the lathe to receive the other pairs. The intermediate gear referred to above revolves on a stud fixed in a quadrant, since it requires no radial adjustment. The quadrant has a projection on its lower side which is machined to the pitch radius of the intermediate gear, and as the same provision is made on the disk for each of its gears it is only necessary to drop the intermediate gear until these surfaces meet and then secure it with a clamp lever.

The range of threads that can be cut on this lathe is from 2 to 56 per inch, and a turning feed from 8 to 224 per inch. Every change required to cut any of the threads or feeds between the extreme limits can be made while the lathe is in motion.

The reversing mechanism is of a type which does not require the use of a reversible countershaft for screw cutting purposes, and as it is controlled at the apron it is very convenient and sensitive. Its gears are placed between the end of the head stock and the apron secured to it, and are driven by a pair of slip gears on the spindle, which may be slipped out of contact if no motion is desired. The reversible spindle engages the forward or backing gears by means of a positive clutch. This clutch is actuated by the operator from his position in front of the lathe carriage by a lever suspended from the apron and sliding on a rod to which it is keyed. The rod is connected to the clutch by suitable device and also serves the purpose of an automatic stop for either right or left hand motion, turning, or screw cutting. The addition of a friction geared head spindle to a standard engine lathe is desirable since its advantages are so great as to outweigh the slight complication of the lathe necessary for its introduction and the slight increase in cost. The frictions on this lathe are carefully constructed and susceptible of ample and convenient adjustment for wear.

The spindle is hollow, of hammered crucible steel, with journals of large diameters and revolves in self oiling bronze boxes. All feeds in the apron are connected by friction and provision is made so that the friction feed and lead screw cannot be engaged at the same time.

The lathe is also furnished with a taper attachment when desired, which is secured to dovetailed surfaces

on the rear of the bed. It has a screw adjustment which facilitates getting the proper taper and is accurately graduated.

The Details of the Design.

The drawings, Figs. 3-7, show some of the principal features of construction of this lathe. The following description is abbreviated from the patent specifications. The disk a is journaled on a stud, a^4, which is firmly held by the casing. The disk and casing are so formed as to provide a chamber for the gears. The disk is formed with a series of openings near its periphery, on each of which is journaled a sleeve having projecting flanges at one end to engage the outside of the disk and one-half of a clutch at the other end. Upon each sleeve is keyed a gear a^{10}, these gears being of different diameters to vary the speed.

The gear on one end and the flange on the other end of the sleeves serve to hold them in position. Any one of these gears is driven by the gear b independently of the others, this gear receiving its motion through a train of gears of which the initial one, c, Fig. 7, is mounted on the spindle. This gear drives the gear d, mounted on a shaft journaled in the casing e. The arrangement of the intermediate gears will be understood from the outline drawing, Fig. 7, the gear g being driven by the gear f and clutchs being introduced between this gear and the spindle gear c. The gear b is carried by a swinging frame, which forms a bearing for the shaft h. Since the axis of the shaft h and the swinging frame are the same the gear b will always mesh with the gear i, and therefore the gear b can be made to engage with any one of the gears a^{10} mounted in the disk a, this disk being revolved on its stud until the desired gear is in proper position to engage with the gear b.

Provision is made for transmitting motion from any one of the gears a^{10} to the lead screw k. In the bearing, referring now to Fig. 6, is a movable sleeve formed with a rack on one side to engage the pinion k^7, which is operated by the handle k^8. One end of the shaft carrying the sleeve is formed with a clutch, which may be thrown into and out of engagement by means of the handle. To adjust the device the handle k^8 is moved to disengage the coupling and then the movable frame carrying the gear b is lifted so that this gear will not engage with any of the gears carried by the disk. The disk may then be revolved until the desired gear is in position to be received on the lead screw shaft, which carries the sleeve. The gear b is then lowered until it is in engagement with the disk gear, which has been brought into proper position.

It will, of course, be understood that the casing can be removed and the speed varied by having the ratio gears f and g of different diameters and reversing their position, placing f on the shaft h and g on the shaft d^2, or gears of different diameters may be substituted, and in this way a great variation of speed can be obtained with a less number of gears in the disk. The principal dimensions of the lathe are as follows: Front bearing of the spindle, 2½ inches diameter 4½ inches long. The back bearing is 2⅛ inches in diameter and 3½ inches long. The hole through the spindle is 1 5-16 inches. The actual swing over the bed is 17 inches and over the carriage 10 inches. The 6-foot lathe takes 2 feet 5 inches between the centers.

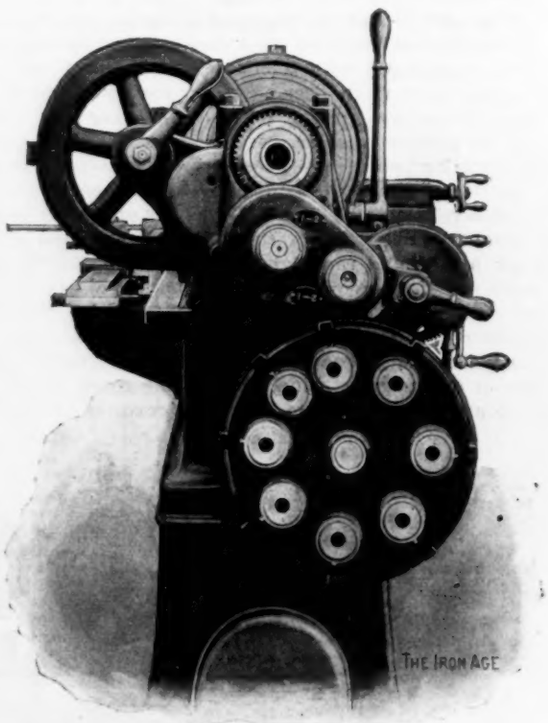


Fig. 2.—End View.

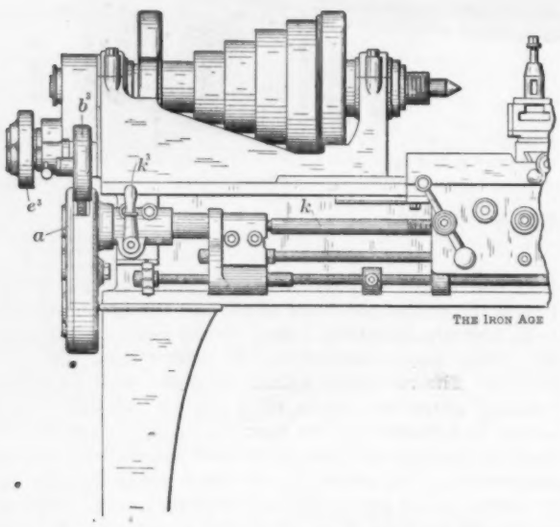


Fig. 3.—Side Elevation of Head Stock.

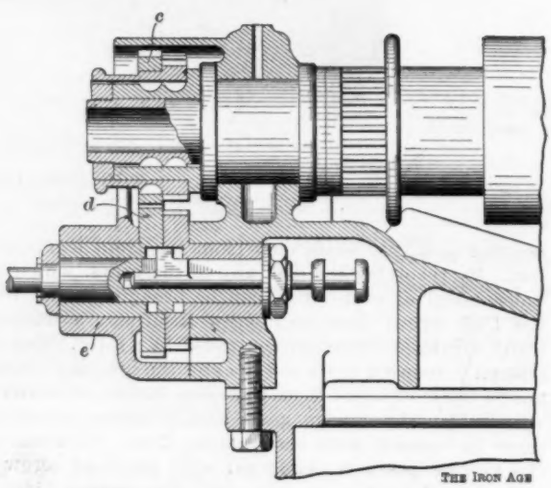


Fig. 4.—Sectional View of Head Stock.

THE NEW IDEAL ENGINE LATHE.

The New Marquette Furnace.—Construction is being pushed on the large charcoal blast furnace, which is being erected at Marquette, Mich., by the Cleveland-Cliffs Company. This furnace is to be the largest of its kind in the world. Its capacity will be 150 tons of pig iron daily. Material is now being received for the buildings, and as the foundations have all been completed the work of construction will make greater headway. It is ex-

pected, however, that the furnace will not be able to get into blast until well along in the summer of next year. The company will bring ore to the furnace from their own ore mines at Ishpeming over their own railroad and will transport the pig iron to lower lake ports with their own steamships.

International Business Relations.

Considerable discussion is being caused by some recent trade developments. It is considered significant in some quarters that certain American manufacturers are erecting branch factories in Great Britain, while on the other hand British manufacturers are erecting either branch establishments or affiliated works in the United States. This is regarded as pointing to a breaking down of international barriers and as likely to bring about an interwoven system of manufacturing interest which may have important results.

The establishments which are thus building branches on the opposite side of the Atlantic from the parent works are not in the same line of manufacturing business. It simply happens that certain American works have a heavy trade in Great Britain which is so rapidly increasing that it is found desirable to establish factories on British soil so as to be nearer to their market, while at the same time they will be conducted under American management and will use American methods in turning out their products. The British manufacturers who are locating branches here are similarly situated with respect to their markets in this country, but at the same time desire to avoid the handicap of the tariff duties which we levy on imports.

It is not surprising that a development of this character is seized upon by some writers as indicating very strongly such a commingling and interlacing of interests as must eventually lead to a sentimental union between these two great manufacturing countries. These writers naturally strengthen their view of the situation by also taking into consideration the manner in which American capitalists are promoting transportation projects in Great Britain or are making investments in British securities. This would seem to be a plausible view if we had not had some experience in such international commingling of interests, the result of which was far from any such close union either sentimentally or otherwise.

It will be recalled that, within the memory of men who have not yet grown old, British, German and Dutch capital poured into this country in vast amounts for the development of railroads as well as great commercial enterprises. At that time it seemed hardly possible for any enterprise of moment requiring a considerable investment to be either established or carried on without the assistance of foreign capital. Our business men then were necessarily brought into the closest contact with our cousins across the Atlantic. It might naturally have been assumed that under such conditions our relations would have been of the most cordial and intimate character. Nevertheless, these relations were only permitted to extend to a certain point. Beyond that the interests of the several nations concerned were at such variance that a closer bond could not be established. It therefore seems at this time, notwithstanding these peculiar developments in our recent business experience, that the movement can be considered nothing more than the development of individual business enterprises. Such developments are occurring simply because opportunities for profit have presented themselves to those who are directly interested. It has always been the policy of this country to preserve friendly relations with all the world, and a special alliance with one country which may operate to our disadvantage elsewhere in trade matters is not likely to grow out of these manifestations of individual enterprise.

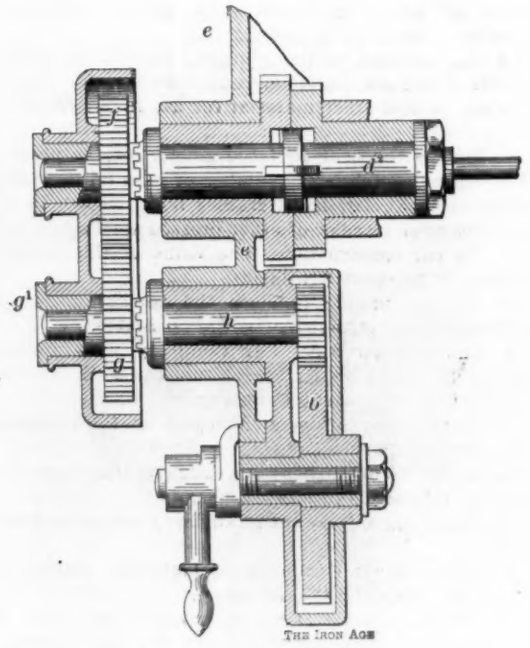


Fig. 5.—Longitudinal Section through Gears.

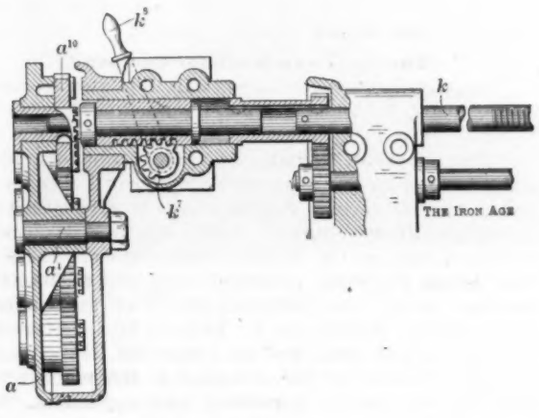


Fig. 6.—Vertical Section of Gears and Connection with Lead Screw.

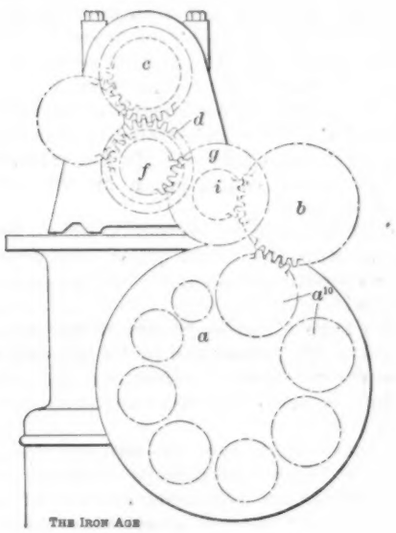


Fig. 7.—End View of Fig. 6.

THE NEW IDEAL ENGINE LATHE.

The Industrial Commission.

Little Headway Made in Drafting Recommendations.

WASHINGTON, D. C., October 15, 1901.—The Industrial Commission has taken up for final consideration the first draft of the report upon the subject of the so-called trusts which it is intended to forward to Congress at the beginning of the coming session. This report will complete the work of the Commission, and the printed documents to be transmitted will embrace the full text of the testimony taken during the past three years, a topical digest thereof, a review of the evidence as it relates to the chief principles of economics, and the official report embracing the findings of fact and the recommendations for legislation by Congress or the States, or by both.

The progress thus far made in drafting the Commission's final report is confined to a review of the ascertained facts, no recommendations of importance having yet been determined upon. Although it has not been practicable to secure the attendance of the entire membership of the Commission, which now numbers 18, yet there has been no great difficulty in securing the assent of a majority to the general propositions set out in the finding of fact. In a general way the Commission divides the industrial combinations into two classes, those which are not monopolistic in purpose and which employ no illegitimate competitive methods, and those which seek to control entire industries, manipulating prices and following aggressive, not to say relentless, methods of competition. The former class is not considered to be large. The objections to the latter class have been summed up for the Commission as follows:

They are destructive of individual initiative.

Their power is a menace to the public politically.

They are objectionable practically because: (*a*) They tend to become a monopoly, raising the price of their product to the public or diminishing the output; (*b*) they destroy private enterprise by direct control or intentionally unfair competition, such as the local cutting of rates below cost to destroy local rivals.

In the matter of devising recommendations to Congress and the State legislatures the Commission is yet a long way from unanimity. In general terms the remedies now under consideration are divided into three classes, as follows:

1. Stricter antitrust legislation by the States and by Congress without altering the present relation between their respective jurisdictions—the present system, but improved.

2. To have Congress release to the States its interstate commerce jurisdiction so far as to allow the States themselves to regulate manufacturing, or trading, corporations engaged in interstate commerce—the State control system.

3. Conversely, to have the national Government take to itself a larger and perhaps exclusive control of all such corporations, regulating by act of Congress all such as do any business across State lines—the system of Federal control.

The difficulty in deciding upon any of these courses lies in the fact that a majority of the 18 members cannot be brought to an agreement upon any comprehensive series of suggestions. In a fragmentary way a number of suggestions have been adopted, but no complete scheme has yet been assented to by a majority. The chief recommendation of the preliminary report, filed by the Commission with Congress a year ago, looking to legislation providing a method for securing greater publicity with regard to the operations of combinations, their share of the output of the industries in which they are engaged, their earnings, &c., will be repeated in the final report, and an effort will be made to give it some practical value by suggesting a means for enforcing such a general statute. Beyond this point, however, it cannot be said that much headway has been made in the drafting of recommendations.

The Pressed Steel Car Company.

Since the testimony was formally closed the Commission has received two additional affidavits, which will be treated as evidence and incorporated in the printed record, one from the Pressed Steel Car Company and the other from the American Radiator Company.

The statement of the Pressed Steel Car Company is submitted by Assistant Secretary C. E. Postlethwaite, and is as follows:

"The following are the answers to the questions sent us in a letter of the United States Industrial Commission:

"1. The name of the company is the Pressed Steel Car Company.

"2. The company were organized January 12, 1901.

"3. They are capitalized for $25,000,000, divided as follows: $12,500,000 preferred stock, and a like amount of common stock.

"4. The product of the company consists of freight cars, truck frames, bolsters, center plates, side stakes, brake beams and other material for use in car construction.

"5. During the year 1901 the amount of the product will be about as follows: Number of cars built, 24,300; bolsters built, 81,800; truck frames built, 39,900; in addition to a large number of other pressed steel specialties for use in car construction. The value of this product will amount to about $24,000,000.

"6. We are unable to state the percentage which this forms of the output in the United States.

"7. The Pressed Steel Car Company were formed from the Schoen Pressed Steel Company and the Fox Pressed Steel Equipment Company.

"8. The number of men employed by the company at the present time is 7700.

"9. So far as we are aware, none of the men employed by us belong to any trade unions.

"10. The company do not in any way recognize trade unions.

"11. There are no imports of materials similar to that manufactured by this company.

"12. We have been exporting about 3 per cent. of our product in our export trade, and this will undoubtedly extend largely in the near future. We have already shipped cars to England, France, Spain, Egypt, Cape Colony and Natal. A shipment of 450 cars will be made in a few weeks to New South Wales, Australia.

"13. Our prices for export are made up on the same basis as those for our domestic trade."

The American Radiator Company.

The statement of the American Radiator Company is submitted by President Joseph Bond, and is as follows:

"The American Radiator Company are a corporation organized under the laws of New Jersey February 10, 1899. The authorized capital stock is $10,000,000, divided into 100,000 shares of $100 each, $5,000,000 being preferred stock and $5,000,000 common stock. There has been issued $3,000,000 preferred stock and $4,893,000 of common stock. The principal plants of the company are located at Buffalo, N. Y.; Detroit, Mich.; Titusville, Pa.; Springfield, Ohio, and St. Louis, Mo.

"The business of the company is the manufacture and sale of heating apparatus and appliances. This company produce practically about 50 per cent. of the entire output of the United States in this line of production. It is evident, therefore, that we do not have a monopoly, but, on the contrary, meet with competition at every step. The policy of the company is to extend their business not so much by taking business from our competitors as by increasing the actual use of steam and hot water heating apparatus in the United States. We are endeavoring to educate the people to the advantages of these systems of heating, and are producing new and more perfect systems and apparatus to meet the demand thus created. As an instance, but by no means the only one, I may mention that we have given considerable attention to the matter of small heating plants for private residences and are creating a new line of business in this direction.

"We do a considerable export business, principally to Europe, exporting steam and hot water heating appliances. We do not sell in foreign markets for a lower price than that charged for similar articles in the United States.

"This company are not so much a new organization as a reorganization. The American Radiator Company, organized under the laws of Illinois, had been in existence about ten years, and when in the early part of 1899 it was determined to increase the capital and enlarge the operations of the company to meet their growing business it was thought advisable to organize a new corporation under the laws of New Jersey, instead of increasing the capital stock of the Illinois corporation. The new corporation immediately after their organization purchased the entire property and business of the old company. As I have stated, the principal reason for this reorganization was to provide a greater capital in order to enlarge our business. A further advantage is found in the purchase of raw materials, inasmuch as these can now be purchased in large enough quantities, when the market conditions are favorable, to carry us over periods when the market is not so favorable."

W. L. C.

The Besly Band Polishing Wheel.

An illustration is given herewith of a new polishing wheel which has recently been placed on the market by

THE BESLY BAND POLISHING WHEEL.

Charles H. Besley & Co., 10 North Canal street, Chicago. This machine was developed in the firm's own shops. They had found much difficulty in securing expert polishers and were obliged to devise something to meet the emergency. With this machine an inexperienced man of fair intelligence, after a little practice, will be able to do fine work. The wheel is for this reason especially suitable for small shops in which no expert polisher is employed to set up wheels and keep them in order. With this machine the polishing surface can be changed from fine to coarse in a minute or two. The complete machine consists of a pedestal, a countershaft and a spindle to hold either one or two emery band polishing wheels. These wheels are made of cast iron. An elastic surface is produced by a felt covering. The emery or other abrasive material is a piece of emery cloth, which is tightened firmly around the wheel. To reset the wheel or change the grade of emery it is only necessary to remove a band and replace it with another. It has been found by the experience of the firm that these wheels are no more expensive than solid emery wheels. The machines are also made with one wheel mounted on the spindle, with the other end of the spindle suitable for buffing, and are furnished with cushioned or with a hard surface.

A Lost Industry.

Under the above caption the Detroit *News* recently published the following interesting article:

Detroit has ceased to be a point for the production of pig iron, after having been the home of that industry for 44 years. The scarcity of charcoal, which is the only fuel used in the production of iron in Michigan, has caused that industry to disappear from the Eastern shore of the State, never to be resumed.

The Gaylord Furnace, near Belle Isle Bridge, went into blast March 1, 1857, and has been in continuous service for 44 years. The last ore was smelted last May, and the only business now engaging the attention of the company is the settlement of the affairs, preparatory to a final disbandment. The resident officers of the company are Prof. C. A. Kent, president; F. B. Gaylord, vice-president and secretary, and Nicolas Woods, treasurer.

The Union Iron Company went out of business in 1898, and Mr. Gaylord and others, who had organized a new company, built a new furnace at Deseronto, Ont., using some of the machinery of the Union Furnace, which they purchased. This step was caused by the Dingley tariff law, which placed a prohibitive duty on Canadian charcoal. For a while the Gaylord Company shipped charcoal from Pennsylvania, but that was too expensive, and the only course before them was to stop business.

The Gaylord Iron Company for many years owned charcoal kilns at various points in the State and in Detroit. Here they made charcoal from wood shipped from Canada, and also had a large Canadian trade for their iron. This trade is now supplied by the new furnace at Deseronto.

The charcoal iron made by the Gaylord Company was extensively used in the manufacture of malleable iron castings and car wheels. Much of it was consumed in Detroit, and the rest was shipped to Canada, Ohio, Pennsylvania and England. In the latter country it competed successfully with the Swedish pig iron. Owing to her location with respect to iron ore and mineral fuel for smelting it is not likely that Detroit will ever number blast furnaces among her industries again.

Proposed Stove Manufacturers' Steel Plant.

Those who attended the annual meeting of the National Association of Stove Manufacturers at Boston will remember the address of President Stanhope Boal, and his allusion to the use of sheet steel by stove manufacturers. The excellent suggestion made by Mr. Boal has been taken up, says the *Leader-Dispatch* of Piqua, Ohio, and a company are being formed who will probably have a number of stove manufacturers as stockholders. It is said to be the intention of such a company to build a plant, at a cost of about $750,000, to consist of open hearth furnaces, rolling mills and planishing and galvanizing works, capable of manufacturing the various grades of steel now used by stove, furnace and range manufacturers. Men who are thoroughly familiar with the manufacture of refined, planished and polished steel and other grades of sheets are said to be largely interested in the formation of this company as stockholders and officers in the management of the plant, which will have a capacity for an annual output of about 25,000 tons.

Stove manufacturers have complained of their inability to obtain the highly finished sheets used in some goods, owing to their being manufactured at comparatively few mills, so that orders must be placed several months ahead in order to obtain stock. This trouble was especially emphasized during the recent strike. Mr. Boal's suggestion is that the plant be run on the co-operative plan, the product to be consumed by the stockholders of the company, and any profit that may be derived to be paid back in dividends.

The Development of the Pig Casting Machine.—II.

BY A. E. FAY.

(*Concluded.*)

Ferris Wheel Machine.

In *Stahl und Eisen* for August 15 Prof. E. Belani proposes a Ferris wheel machine for casting pigs. The chief object is the avoidance of what he terms the "barbarous practice" of suddenly heating the molds by pouring metal into them and then suddenly cooling them in water several times during a heat, and 20 or 30 times during each day. A framework is provided, rotating on a horizontal axis and bearing on its circumference two series of molds, hung on trunnions and kept in an upright position by gravity. The molds have overlapping lips, and are poured continuously near the bottom until all on one side of the wheel are full, then they pass up and around once and a half apparently. They are overturned when they come to the top the second time by a cam striking projections on the bottoms of the molds. This cam is movable so as to allow the molds to pass it once. The pigs fall onto a chute and glide into cars. Meantime the other half of the molds are being filled. An impossible method of driving the machine is illustrated. It is proposed to place two of these machines side by side, each carrying two series of 150 chills each—that is, 600 in all. Each one containing 150 pounds of metal, the plant would take care of an output of over 40 tons. Allowing a space of 0.4 m. (15¾ inches) for each chill, a wheel 20 m. in diameter at the line of the chills would be required. The professor says that for the same work (without filling a chill twice) three ordinary Uehling machines, or one 120 m. long, or a Davies or Ramsay machine 100 m. in diameter, would be required. He says the wheel should be run at a speed of 0.1 m. per second at the circumference, 12 chills being filled per minute; this allows 10½ minutes per revolution. This construction would be equivalent to standing a Davies machine up on end, as it would be 65 or 70 feet high, and although the abolition of the water bath and the sudden changes in temperature of the molds would undoubtedly be an advantage, yet it does not seem desirable to erect two or three structures like this for each blast furnace.

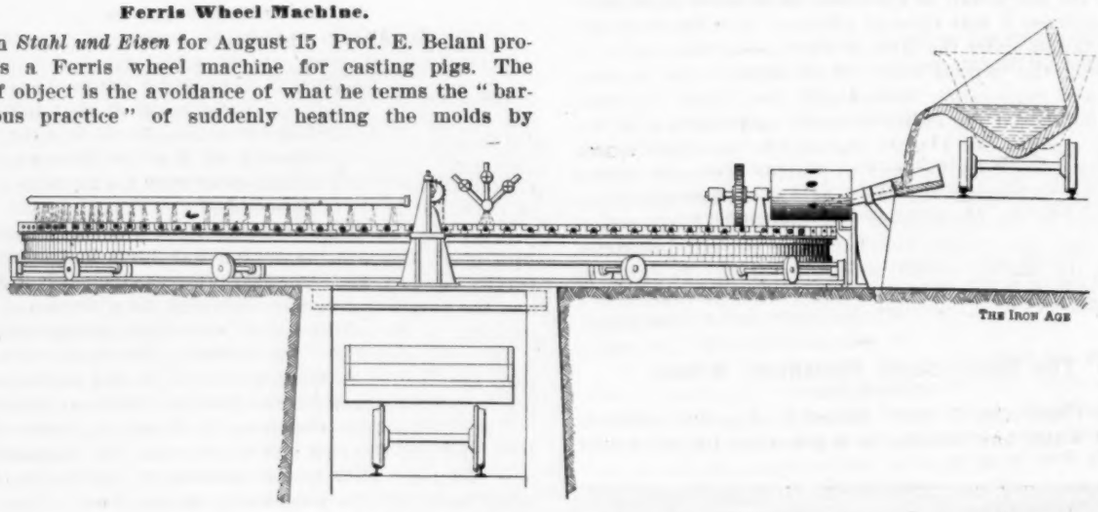


Fig. 7a.—The Ramsay Machine.

Ramsay Machine.

Erskine Ramsay has designed a machine (shown in Fig. 7*a*), in which the metal is first poured continuously down a trough into the outer end of a controlling device called a "pouring drum." This drum is cylindrical in shape, having a cylindrical passage extending axially through it, and is provided with six or more ducts leading radially from the central passage to its circumference. Between these ducts there are walls to cut off the flow of metal from all but the lowest one. The drum is mounted in a horizontal position above the path of movement of the molds, and is geared to rotate

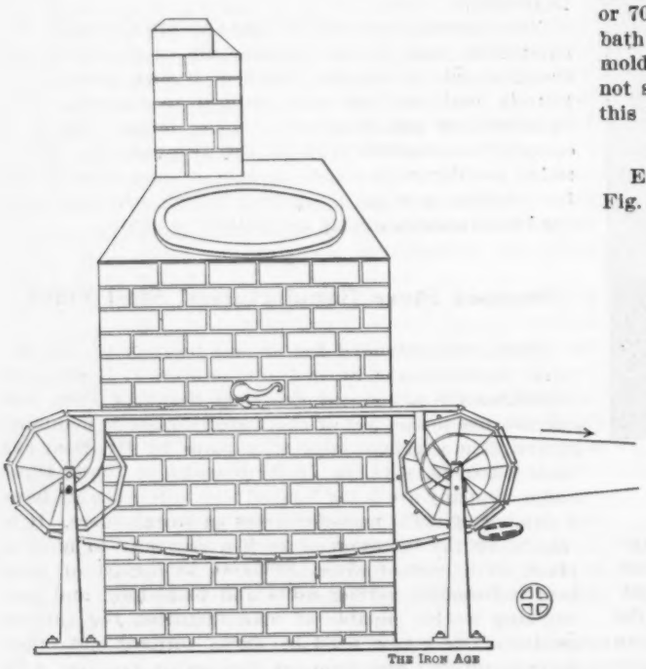


Fig. 8.

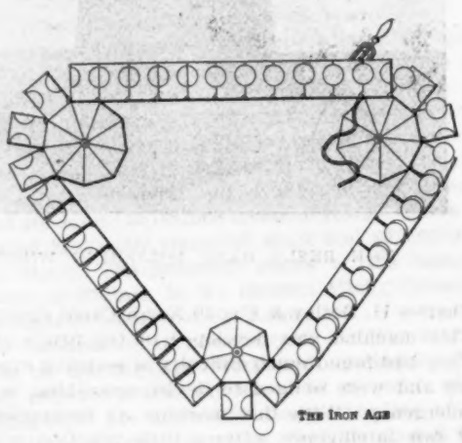


Fig. 9.

Campbell's Machine.

with the table at the same circumferential speed, so that each of the outlets as it comes to its lowermost position registers with a mold, the distance between the outlets on the drum being equal to the distance between the molds. This device permits continuous pouring without necessitating overlapping lips on the molds or deflectors between them, and no costly means for imparting an intermittent motion is needed. Although Burden used a device of this nature for distributing ore in his machine it is a new thing in pouring molten metal. Ramsay uses hammers to loosen the pigs, and sprays luting on the molds by means of a steam jet. The molds are simply laid on open bearings, so that if one becomes cracked it can be removed and a new one supplied without stopping the machine. It is to be understood that the molds in all of these machines are overturned in the manner adopted by Davies.

Complete descriptions and illustrations of the improvements designed by John M. Hartman of Philadelphia were given in *The Iron Age* on September 28 and November 16, 1900.

Collins Machine.

As has been stated, this type of machine has been represented for several years in the copper industry by the Walker machine, and two more have recently been designed for that use. That of R. G. Collins is very elaborate. It consists of two intermittently and alternatingly revolving tables, each carrying near its periphery a series of mold carriers, which are raised to and held in a vertical position by resting on the edge of a spiral cam, which lies in the path of the mold carriers. The cam is abruptly terminated at its higher point, from which the mold carriers, in turn, are precipitated, being inverted. As they drop off they hang pendent until raised again by the said spiral cam. When the mold carriers are thus inverted, the carriers, mold and ingot, or cake, are immersed in water. The ingot falls out of the mold by the shock imparted by the carrier striking a fixed but replaceable anvil arranged for this purpose. The mold and carrier remain in the water bath for a certain definite portion of the revolution of the table, and are cooled thereby until they are automatically raised into a vertical position, when the mold is again ready for the reception of the molten metal. The motion of the tables carrying the mold carriers and molds is produced by a power which is controlled by a man who manipulates the ladle. The ladle is located in a plane above the tables, and in a position midway between them. It is provided with two lips on each opposite side, so that two molds may be filled at one and the same time on either side. After a pair of molds have been filled on one side of the ladle the operation of tilting the ladle for the purpose of filling a pair of the molds on the opposite side liberates the motive power which moves the table on which the molds have just been filled, thereby carrying them ahead one notch and substituting an empty pair ready to be filled. At the same time a mold carrier on an approximately opposite side of the table drops off of the spiral cam, falls into the water, disposes of its ingot, and remains in the water until raised again in the course of the operation. While one of the tables is stopped for filling a pair of molds on it, the other is being rotated one step. The ladle may be fed from the furnace by a siphon. This scheme for controlling the rotation of the tables by means of the tilting of the ladle makes a most beautiful and ingenious mechanical device, but seems too complicated. It is impossible that this machine should ever come into dangerous competition with the Davies style of machine, and it is not seen how it can with that of Walker. The latest copper casting machine, which was patented five or six months ago, is simply a modification of Walker's machine. A very simple machine has recently been designed especially for casting zinc by W. & J. Lanyon; it has no new features, the molds being dumped in the old way by hand.

Casting Sash Weights.

About the only other important use to which it has been attempted to put machines of this general type is the casting of sash weights. Generally the molds are placed in an upright position and are automatically opened and closed, being poured from the ladle as is the usual custom. F. N. Cline's machine seems to be the simplest. A. K. Barker's machine has an elaborate water cooling system, and has horizontal mold frames, with several cavities in each. This machine, as a whole, has not yet been constructed, but the water cooled molds have been successfully experimented with.

First Casting Machine from Wales.

To summarize: The first suggestion for a casting machine of any kind came from Wales about a century and a half ago, and it was a machine of the type under consideration. The first real development took place in this country three-quarters of a century ago, in small machines designed for casting lead balls and other small articles. The only further part that Europe had in the development of these machines came shortly after Bessemer's great discovery, and, although they were used quite extensively, especially in Sweden, they did not bear directly upon the modern machines. The next steps were again taken in America about 1870 in the attempts to improve the apparatus for carrying out the Ellerhausen process. The nearness of these machines to practicability was not recognized, however, and the need of them, for any purpose except that for which they were designed, was not felt, and when they were no longer needed for that they were abandoned and forgotten. Spasmodic attempts were then made for a number of years to use the principle for casting slag, and with some success, but not enough to cause much real progress. It was about ten years ago when attention began to be forcibly directed to the value of machine cast sandless pig, and it was in 1891 that Hibbard first designed a machine for producing it. He was shortly followed by Vaughen with improvements, but it was not until 1898 (after the success of the Uehling machine was assured) that Davies devised the machine that now represents this type in practice. This, with the Ramsay, Hartman and Cooxton varieties, is all we have in blast furnace practice as yet, and only two of these are in actual operation.

As to the copper industry, it seems that Walker's machine, together with Dyblie's (to be described later), has already worked a revolution in the process of casting anodes, wire bar castings, &c.

The Endless Chain Machine.

In this form of machine the molds are secured to an endless chain, traveling around sprocket wheels mounted on horizontal shafts. The molds are filled soon after coming up over the rear wheel, and the castings or pigs cool while the molds pass from this point to the front wheel, where they are discharged, generally by simply falling out as the molds come to an inverted position. These machines, like the turntable ones, are of two kinds, those with closed divided molds for castings and those with open topped ones for pigs.

Campbell Machine.

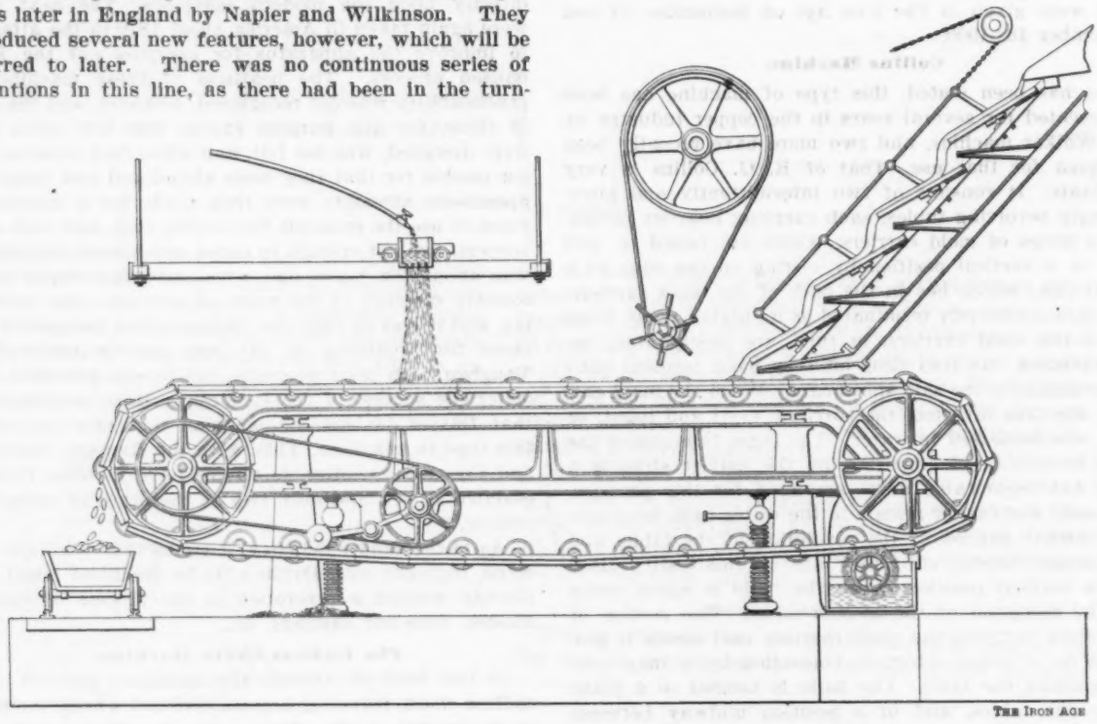
The idea of attaching molds to an endless chain seems to have originated in France, where it was used in the brick making industry as early as 1843, but the first machine for casting metal was invented by Geo. W. Campbell of Belleville, N. J., in 1847. The brick machines had molds of the open topped variety, and Campbell had that idea in mind, as appears in Fig. 8, but his more important device, being designed for casting lead bullets, had divided molds, as shown in Fig. 9. The castings are shown dropping out of the molds. A continuous trough was made along the outer face of the mold sections connecting the sprue holes, the metal being poured continuously. Campbell stated that if the castings were not readily detached from the molds that operation could "be aided by a small trip hammer striking each section at its lowest point."

The next metal casting machine of this type, with open topped molds, was invented in Chelsea, Mass., in 1848 by Bachelder and Dyer. It was designed for forming type, and evidently was not of much value. J. P. Driver added some new features to Campbell's machine in 1863, consisting of a spring actuated hook to loosen the castings and the provision of several parallel series of molds in one machine.

In the casting of ingots probably the first suggestion in this line was made by Bessemer about 1860, when he proposed an endless series of ingot trucks or cars on tracks passing successively under the pouring spout.

Blair Machine.

The real beginning, however, was not made until 1866, when Thomas Blair, who has been mentioned in connection with the turntable machines, invented the first endless chain pig casting machine. As shown in Fig. 10, it was exceedingly complete, considering that it was the first designed for the purpose. *f* is the spout from the melting furnace; *h*, *h*, *h*, *h*, air blast nozzles; *g*, *g*, *g*, *g*, platforms, whose angle to the horizontal is adjustable; *i*, an air cooling fan; *n*, a hammer operated by a tappet for loosening any pigs that might stick; *o*, a cleaning brush. After the invention of such a complete machine little interest will be taken in the bullet casting and compressing machines invented six or eight years later in England by Napier and Wilkinson. They introduced several new features, however, which will be referred to later. There was no continuous series of inventions in this line, as there had been in the turntable machines, each one leading up to the next and finally evolving into a practicable and useful machine. There were really no inventions of any importance between 1866 and 1884, although a few patents had been taken out on machines for various purposes. Burden again suggested casting "pig blooms" on an endless chain machine in 1869, but did not, so far as known, design a machine. In 1871 David Joy proposed a plan for removing slag from the furnace by an endless band, and a similar device was soon after worked practically at Walker by Thomas Bell. Woodward in England and Wilmart in France again tried the same thing a few years later, but they added nothing of value. Several type casting machines of this kind were proposed, and M. J. Shimer designed a simple looking machine for casting sad irons.



The Blair Machine of 1866.

THE DEVELOPMENT OF THE PIG CASTING MACHINE.

Durfee and Egleston Machine.

The third important invention in this line was made in 1884 by W. F. Durfee and T. Egleston. It was designed for casting copper. There were two sprocket wheels on the same level, and midway between them at considerable distance below a stationary cam to dump the molds, which were held in an upright position by counterweights, after passing over the rear sprocket. Between the sprockets the chain was supported in a horizontal position by rollers mounted in bearings on the frame work, and on the return hung down freely below so as to pass under the stationary cam. All this part of the chain hanging down was contained in a water tank. A hydraulic lift was provided for removing the ingots from the tank.

Slag Casting Machines.

A number of slag casting machines, which were brought out about this time, had a very important bearing on this subject. The first of these, which was patented by a German company (Vereinigte Königs und Saurahütte Aktiengesellschaft) in 1885, showed pans with overlapping lips, cooled on the bottoms by heavy streams of water for a long distance, and then on top by a stream descending directly on the slag in the pans. The most important of these machines, however, was designed by Wm. Hawdon in the same year. It was fully described in *The Iron Age* on March 10, 1892, and August 16, 1894. When the first of these articles was written Hawdon had eight of his machines at work at the Newport Iron Works of Sir B. Samuelson & Co., at Middlesbrough-on-Tees, and the second contained a photograph of one installed at No. 6 furnace of the Cambria Steel Company, at Johnstown. The pans after being filled passed through the air for a short distance, then into a water tank, where they were cooled on the bottom by passing along in the water near the surface, being sprayed on top at the same time, and then passed through the air again to the cars, into which the slag blocks were dumped. They could be further cooled here by spraying or otherwise. The chain was supported at the ends by the sprocket wheels and at the ends of the tank by idlers. There were about 90 pans, and the machine occupied a space of from 80 to 100 feet by 8 feet, which seems too great a length, especially for slag. This was a most important invention in this art, and most of the machines which have proved practically useful have been mere improvements on it. The improvements have generally been made for the purposes of shortening it and enabling the product to be easily discharged. Naturally the first machines to follow it were designed for cooling slag. The dumping of the blocks directly into a water tank situated under the front end of the machine and removing them from the tank by means of a second endless carrier was suggested by

Bath in 1889 in England. This shortened the machine considerably. The machine of Wm. Moore (1894) showed overlapping lips and a track arrangement very much like that now in use. Recently H. K. Geer has suggested mounting the whole apparatus on transverse tracks, so as to accommodate several furnaces successively.

About ten years ago a German firm (Rheinisch-Nassauische Bergwerks und Hütten-Aktiengesellschaft of Stolberg) patented an intermittently operating machine of this type for casting pig lead. The molds instead of being mounted on a chain were merely connected together by links, the projections for engaging the sprocket wheels being fastened to the bottoms of the molds.

None of these machines, except Hawdon's, came into use to any extent until E. A. Uehling brought out his

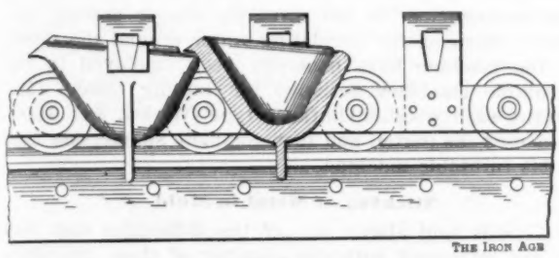


Fig. 11.—Holmboe Machine.

machine. Mr. Uehling has described his machine and advocated the use of sandless pig before several metallurgical and scientific societies in this and foreign countries, and the machine has been illustrated by nearly all the trade journals in the world which are devoted to the iron and steel interests. His interesting paper, read before the Pittsburgh Foundrymen's Association, was reproduced in *The Iron Age* on March 3, 1898, and the machine installed at the Lucy furnaces in September, 1896, was fully illustrated in the issue of April 22, 1897. The machine is therefore so well known that it is not necessary to give a detailed description here. The chief trouble with the early machines had been the difficulty caused by the molten metal burning out the cast iron molds and sticking to them. To overcome this Uehling sprayed his molds with fire clay, graphite, loam, lime, &c., and provided means for continuously applying this spray. This did away as a general thing with the necessity for mechanical means for ejecting the pigs, and was the most important feature of Uehling's original machine, for all the rest of it was old in the art. The overlapping lips enabling continuous pouring had been used in practice on chain slag casting machines since 1885, and had been proposed by Burden for the turntable machines a quarter of a century before Uehling studied the problem. The spraying of the pigs in the molds had been done by Hawdon, Truran and others, and the use of two or more series of chain molds had been suggested a half a century before, although it was for a bullet casting machine. As to the coating of the molds, Burden had proposed taking them off the table and immersing them in clay water by means of a crane in 1869; Wilkinson had provided means for cleaning the molds after each cast and had brushes revolving in an oil vat for coating the molds in 1872; Peck had provided an endless chain slag cooling machine with means for discharging sand into the molds in 1888; and, in a different but somewhat analogous art, Quinn and Moulton provided an endless chain crayon molding machine with an oil reservoir, and automatic means for pumping the oil and injecting it into the molds, in 1891. Numerous rotary brick making machines, invented since 1869, have had means for sprinkling the empty molds with sand, and several of them have had spray pipes for injecting a lubricating material, such as oil, to prevent the clay sticking to the molds. With all this in metal casting and other arts, it would seem that it did not require a great deal of real invention to bring out Uehling's broad idea, which is set forth in his claims as "continuously injecting refractory material into the empty molds as they return to be filled with molten metal."

Work of Uehling.

But Uehling had the foresight and good fortune to combine all these old features in such a way as to produce a practical machine at just the time when some such machine had become almost an absolute necessity in blast furnace practice, and this, plus the energy which was devoted to the subject by the inventor and his associates, made the machine commercially and financially successful in a very short time. The extent of this success was indicated at the beginning of this paper, and was such as to stimulate inventors and manufacturers to devote a great deal of time and money to the improvement and perfection of casting machines, and especially those of the endless chain variety. Previous to Uehling's invention there had been only about half a dozen patents granted by the United States on this type of machine; but there were five in 1899 and seven in 1900 and about the same number of turntable machines have been patented in this country during the past three years. Uehling, Miller and Scott have made many improvements on the original machine, among them being a pouring device having two oppositely projecting spouts to deliver simultaneously into the two parallel carriers which are generally used for large outputs, a new design for the links and method of attaching the molds, a yieldingly supported discharge chute, a lime mixing tank and spray nozzle, a water tank above the whole device for spraying and cooling the links, and a mold composed entirely of fire clay, hydraulic cement or other refractory material, or made of such material supported on a skeleton framework of metal, as a substitute for the metal mold coated with refractory material. They have also patented in Great Britain a mold with an overlapping lip shaped like an inverted V, which appears

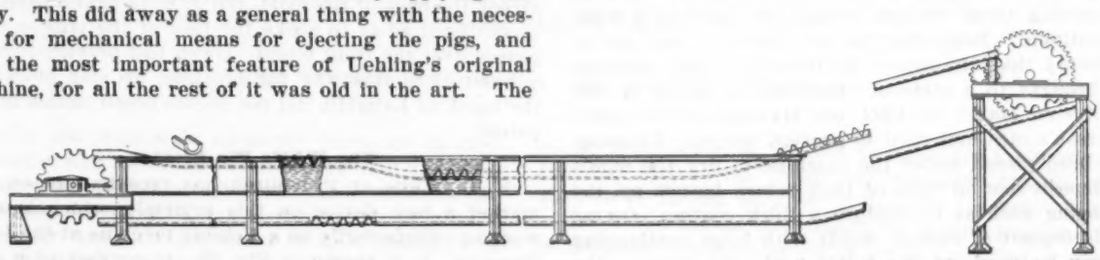


Fig. 12.—The Uehling Machine.

THE DEVELOPMENT OF THE PIG CASTING MACHINE.

to be exactly like the device proposed by Napier, in 1870, for his endless chain bullet casting machine.

Holmboe Machine.

L. C. B. Holmboe of the Illinois Steel Company has suggested some improvements on this machine which consist chiefly in mounting the molds on the chain in sockets of such shape as to allow injured molds to be easily removed and replaced, and to permit the molds to drop a short distance in these sockets as they pass down over the discharge end of the machine, in order to jar the pigs out (Fig. 11). He also has a lifting device for elevating the molds into position on the chain on the return, a spring device being provided for allowing the molds to be put in place and then holding them there. The idea of imparting a sudden shock to the mold by dropping to discharge the castings was first

suggested in 1869 by Smith and Coyne. Diebold employed it in 1883 and Collins has now adopted it in the turntable machine, but Holmboe's construction is entirely novel.

Uehling Machine.

In the Uehling machine the pigs may be sprayed with water while in the molds, or they may be dropped from the carrier, as at the Lucy and other furnaces, onto a plate conveyor, which carries them through a water cooling tank and up an incline to a chute for delivery into cars. It requires a machine from 80 to 130 feet long, however, according to speed, &c., to cool the pigs sufficiently to prevent bleeding when discharged. The molten metal also tends to warp and crack the molds, and they are continually being replaced by new ones, their average life being from 25 to 30 days, and, of course, the heat has a bad effect on the links and other connections. In order to get a machine which would not need to be so long, and one in which the molds and other parts would have a longer life, Alfred M. Acklin devised the scheme of providing a water tank containing tracks at two levels, the molds not being submerged when poured, but passing along in a partially submerged state until solidified on the outside, and then passing down into the water and being completely submerged until the pigs were set sufficiently to permit discharging into cars. This machine is shown in Fig. 12.

This machine has been extensively improved by Acklin and by Wm. J. Patterson of Pittsburgh, and was the chief rival of Uehling's machine until all the antagonistic interests were consolidated by the American Casting Machine Company. The improvements consist chiefly of details of links, sprocket, mold supporting and tank construction, but they also have succeeded in pretty thoroughly covering up, by patents, all possible methods of cooling in water. Two of their patents may, perhaps, be best described by quoting a claim from each: "The herein described method of casting metals, which consists in pouring the metal into an endless connected series of traveling molds, partially submerging the loaded molds in a body of water, and at the same time keeping the contents of the molds out of contact with water until the metal is sufficiently set, and subsequently spraying the metal with water while it is still contained within the molds," and "The herein described method of casting metals, consisting in pouring the metal into an endless connected series of traveling molds and submerging the molds and their contents in and moving them through a body of water in a state of ebullition." Regarding the last claim, it may be remembered that the water in Hawdon's slag machine was brought to a state of ebullition, as stated in *The Iron Age* on March 10, 1892, but Hawdon did not have Patterson's idea and tried to prevent boiling. Furnaces have been placed under the machine to dry the molds and deposit soot on them on their return bottom up, the fuel being such as to produce a thick coating. Owing to this deposit of carbon, molds with large overlapping lips can be used, as the metal tends to assume the spheroidal state and does not adhere to the molds or their lips. A description of a Patterson machine was given in *The Iron Age* on May 18, 1899. These machines deliver about 2 tons of pig per minute to railroad cars and require about 15 horse-power for operation.

Chief Improvements.

It will be noticed that the chief improvements brought about by these inventors have had relation to methods of cooling the pigs by water, and a brief summary of early attempts in this direction may be of interest. Morris, the first man to suggest a casting machine, apparently had his molds in water all the time. Next came Duvall, in 1838, who cooled his molds in a tank after the castings were discharged, by merely passing them over the tank and allowing the bottom plates to drop down at the rear and pass through the water. In endless chain pig casting machines, pouring or spraying water on the top of the pigs while in the molds was first suggested by Blair, in 1866, and to this was added the previous cooling on the bottom by upwardly directed streams of water, in 1885 (Königs und Laurahütte, Aktiengesellschaft, above mentioned). The substitution of the idea of carrying the molds along in a tank near the surface of the water to cool the bottoms and at the same time spraying the cestings (slag blocks) on top was made by Hawdon in 1888, and he was soon followed in this by Truran in a different kind of machine. This idea was what really led up to the recent inventions of Acklin and Patterson.

Durfee and Egleston immersed the pigs while in the molds and discharged them while so immersed. The first to keep the molds dry and discharge the castings directly into a water tank was Burton, whose device was designed for casting bullets in 1882. He had an ingenious arrangement which has recently been improved by Dalrymple and McGrath. This idea was employed by Bath, in 1889, in an endless chain pig casting machine, an endless belt conveyor being provided to remove the pigs from the tank. Walker uses substantially this arrangement in his turntable copper casting machine. Systems for circulating water around the molds in the machine have generally been employed in the turntable machines designed for casting bullets (McGrath), sash weights (Barker), type (Wicks), &c. Hartman uses the partial and then complete submersion idea in his turntable machine.

Sticking of Metal to Mold.

As was said above, one of the difficulties that has always interfered with the adoption of these machines was the sticking of the metal to the molds. It was especially troublesome where cast iron molds were employed, but Uehling, Davies and others have retained these because they could be cast so easily in the blast furnace plants. Acklin, Patterson and Hartman, however, have adopted pressed soft wrought iron or steel molds, which have a higher melting point than the pig metal, and coatings of refractory material are applied to both kinds to prevent sticking. But in some machines it is still a source of trouble and a man has to be stationed at the discharge end of the machine to dislodge some of the pigs. Two mechanical substitutes have been described—allowing the mold to drop a short distance to jar out the pigs and striking the molds or pigs with a hammer operated by the machine. Naturally the latter was the earlier idea, being first proposed by Duvall in 1838 for a turntable machine and by Campbell in 1847 for an endless chain machine. It was also adopted by Blair and Ramsay. In all these cases the hammer struck the back of the mold, but J. B. Laughlin proposed mounting it so as to strike the face of the pigs as they passed over the front wheel. Owen had previously used a hammer in this way for breaking up slag blocks in the mold, so Laughlin did not secure broad claims in his patent.

The White Pig Ejector.

F. L. White of Pittsburgh has recently put on the market a new device on this principle, which is now working satisfactorily on a Uehling machine at the Lucy furnaces. It is shown in Fig. 13. It consists of a pair of cylinders supported on trunnions in a base plate casting placed directly in front of the casting machine in such position as to allow the piston rod extensions, which act as knocker bars, to strike the pigs in the molds just before reaching full stroke forward. These cylinders are connected by pipe and flexible connections to a rotating disk valve attached to the end of the head shaft of the casting machine and operated thereby, the valve and valve casing having ports so arranged as to admit the air or steam at intervals during its revolution to each cylinder in turn, causing both piston rod extensions to strike each pig as it comes forward, one rod striking each end of the pig, one a little ahead of the other. This has a twisting effect on the pigs in the molds and insures their being detached so as to drop out. This pig ejector can be attached to any metal casting machine of the endless chain type without any expensive alterations, the only change being the addition of supports for the valve, a platform for the ejector and a collar coupling on the end of the head shaft.

The only endless chain pig casting machine which has recently been invented outside of America is an

improvement which Wm. Hawdon has recently made on his slag casting machine. He now keeps the molds and chain from all contact with water, discharging the pigs onto a rotary table conveyor and cooler, which rotates in an annular tank of water. After passing around on this under water the pigs are pushed by a stationary deflecting plate onto an endless chain conveyor, which lifts them out of the water and deposits them on the cars. Two parallel chains of molds are employed, one pouring trough supplying both. Otherwise the machine is like the inventor's old one or like Uehling's. It is not patented in this country. The necessity for both the rotating table and chain conveyor in the water tank is not apparent; it would seem that the chain might better be so constructed as to perform all the work, as is done by Bath and Walker.

Miscellaneous Casting Machines.

There are two other types of casting devices which, although they do not operate continuously like those described, yet may well be mentioned here, as they are generally designed for the same purposes. In one type the molds pass back and forth before the ladle or furnace to be filled, and are usually mounted on trucks, according to the suggestion made by Bessemer in 1855. This scheme was mentioned by Blair, Burden and other early inventors, but has not been much used for the work under discussion here. Generally when used it has been for upright ingot molds in steel plants, to be supplemented by a stripper. In the other type the molds are mounted on trunnions, so as to be overturned to discharge the pigs, being generally supported in a stationary frame over a water tank. Although these two types have been distinguished, the important features of both are frequently found in the same machine. Moreover, there has been no progression in invention in either of these types from primitive to modern constructions, practically all the inventions except those mentioned having been made since Uehling's. Consequently some of the most important of these will be described without any effort to classify them.

In the design of W. S. Reese a series of molds is held in a wheeled frame on tracks extending in front of the furnace and over a water tank. Several of these frames are successively brought into position for pouring from a ladle carried on an overhead trolley, and are then pulled along over the tank to cool. A specially designed device is used to dump the molds individually to discharge the copper ingots into the water. After the operation all the mold frames are brought back to their starting position on the other side of the furnace.

David Baker of Sparrow's Point, Md., has devised a casting system or plant in which a "traveling runner" or ladle is made use of to fill the series of reversible tilting molds, but as his latest improvements were fully described and illustrated in *The Iron Age* on May 19, 1898, it is not necessary to say more about it now. Frederick Hardy of Birmingham, Ala., has suggested a device having molds nearly cylindrical on the outside mounted on end trunnions, with deflecting plates between them to prevent metal being poured on their edges. Each mold is provided with a projecting arm, all of which are connected together by a cable which is operated to overturn the molds and right them again. The molds in these two machines are mounted in stationary frames.

The Dyblie Wire Bar Casting Machine.

The photograph, Fig. 14, shows a machine which was set to work two or three years ago at Anaconda, Mont., being the invention of J. A. Dyblie, now chief engineer of the Joliet works of the Illinois Steel Company. The molds are capable of reciprocating on tracks over the tank, and at the proper time are all overturned by means of the hand wheel at the left to discharge the castings into the water. The molds are reversible and do not have to be turned back every time, as the overturning of one brings the opposite one up to pouring position. It is intended to have a series of molds and tank at each end of the tilting furnace, both being supplied in turn by one ladle. The castings are removed from the tank by means of an endless chain conveyor working in it. The illustration shows the tank without water in order to bring out more of the parts. Wire bar castings are said to be made on this machine with the tilting furnace free from pin holes and seams, and as good in every way as those produced by the old hand ladling process, which has generally been considered indispensable. There is also a material reduction in cost, the time required being reduced one-half and the number of men employed being considerably less.

R. H. Wainford's pig iron casting machine is a good deal like Baker's, and consists of a series of tilting molds mounted in a stationary frame and filled by a ladle and controlling vessel traveling up inclined tracks, so that the pouring lip will always be the same short distance above the molds as the ladle gradually empties on the way up. The molds are inclosed in a non-conducting casing, in order to prevent chilling and get the open fracture of sand pig. The object of the machine is to prevent the vibration always present in the ordinary

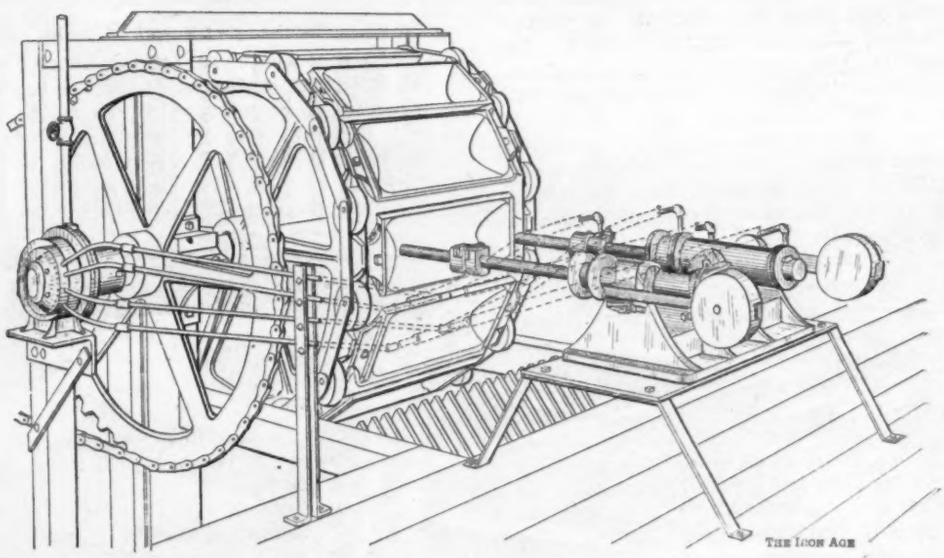


Fig. 13.—The White Pig Ejector.

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pig casting machines, and get the fracture of sand pig together with the benefits of machine cast pig. The description of this machine before the Iron and Steel Institute in 1899 brought out considerable discussion from some of the most prominent iron and steel men in Great Britain, some of it unfavorable to this machine and much of it unfavorable to all casting machines.

Austria has contributed one machine to this art, that of Karl Orth. It comprises novel molds, means for tilting them, metal feeding troughs, &c., but it has been so recently described in *The Iron Age* (November 29, 1900) that it is not desirable to describe it again now. It has the greatest capacity of any of these machines.

Prof. E. Belani of Graz, in a contribution to *Stahl und Eisen* last January, drew attention to the complicated structure of the pig casting machines in use, stating that if a simple plan could be devised to take up and carry out the pigs, that being the most troublesome and expensive part of the labor, it would leave nothing to be desired. He suggested a stationary pig bed, with tilting chills and a system of cars underneath to receive existing sand pig beds. The Professor doesn't state how he intends to control the flow from the main runner to the cross runners, and neglects several other mechanical details. He says nothing about first cost nor the probable amount of repairs necessary to the extra parts, which would be quite an item, especially for the cross runners. The number of men required to tilt the cross runners and molds and to see to the extra cars underneath, &c., is not mentioned, but it would undoubtedly be more than the casting machines now in use require. The gain in time that he mentions would be slight and would be neutralized by that consumed in waiting for the pigs to cool in the molds without the use of water (especially as he covers the bottoms of his molds with asbestos to retard conduction of heat), and especially by the delay incident to removing the cars from underneath after being loaded with pigs. The longer life of the molds would be counterbalanced by the greater number needed and the short life of the cross runners.

Two other devices which have recently been brought

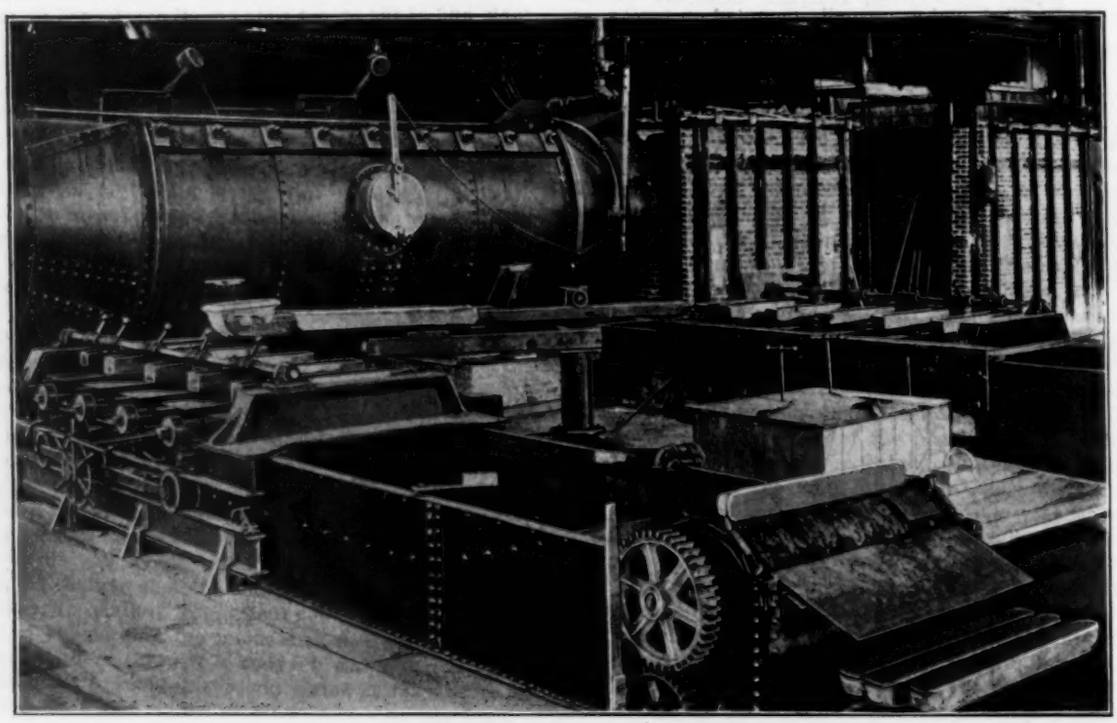


Fig. 14.—The Dyblie Wire Bar Casting Machine.

THE DEVELOPMENT OF THE PIG CASTING MACHINE.

and distribute the pigs, just what was proposed before by Baker, Wanaford and Orth. The metal would be led as usual from the furnace into the main runner and thence to cross runners, which would be below the level of the outlets of the main runner and independent of the latter, so as to be movable. When the first one of the cross runners on each side of the furnace was filled it would be tipped up by hand and the metal discharged into a series of pig molds conveniently arranged. During the time, says the Professor, which would be required to fill a casting machine ladle the entire work is done on this machine, the cross runners filled and emptied into the molds in succession and the pouring completed. It only remains to dump the pigs from the molds, which is done by a boy operating a simple hydraulic engine, and to operate the cars underneath to take them away. Consequently, he says, one has time to allow the pigs to cool, has no sprinkling nor immersing in water to do, no troublesome steam, no unnecessary manipulations of the iron, and, moreover, the chills do not have to be luted and can be used longer. The construction of the device would be extremely simple and it could easily be put up in any blast furnace plant in place of the

out may as well be mentioned here. M. M. Suppes of Lorain, Ohio, has a moving metallic bed consisting of several parallel series of molds mounted on a car on a track. On another track at a higher level are ladle cars pouring into a metal reservoir mounted to swing on a stationary standard between the two tracks. This reservoir has a long runner extending out over the pig bed provided with several spouts to deliver the metal to the different molds. Mr. Suppes has designed a special lifting device and connections to the pig beds to facilitate picking up the sections one by one and carrying them away to dump the pigs out, the whole operation being performed by one operator.

A peculiar device, designed by Henry Aiken of Pittsburgh, for use during the nonworking intervals of a direct process plant consists of a casting frame of considerable length mounted on end trunnions so that it may tilt sideways. An inclined series of molds is secured to it at its two opposite sides, each mold having a lip overlapping the one next below, so there is no metal spilled. He uses two of these devices, so as to work them alternately, that the pouring may be carried on continuously.

The Farwell Cutter Grinder.

The Farwell grinder, built by the Adams Company of Dubuque, Iowa, is designed for grinding milling cutters. It is intended to be clamped to the table of the machine, as shown in Figs. 2 and 3, and to be driven from the miller countershaft by a round belt. The emery wheel may be swiveled to grind the sides and face of any straight tooth cutter without removing the cutter from the spindle. This insures the accuracy of the cutter, since it is ground upon its own arbor. The

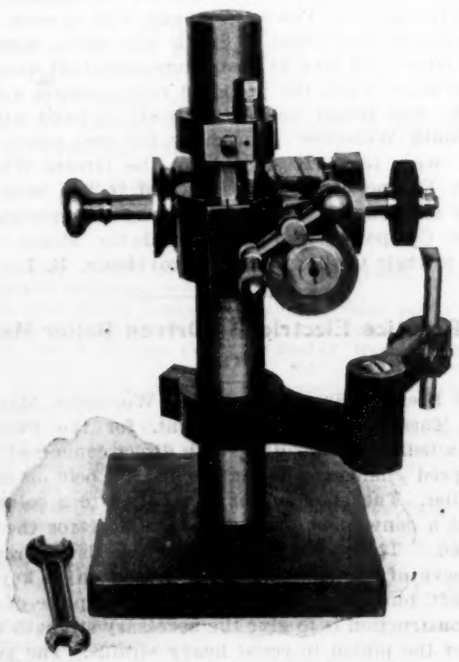


Fig. 1.—The Grinder.

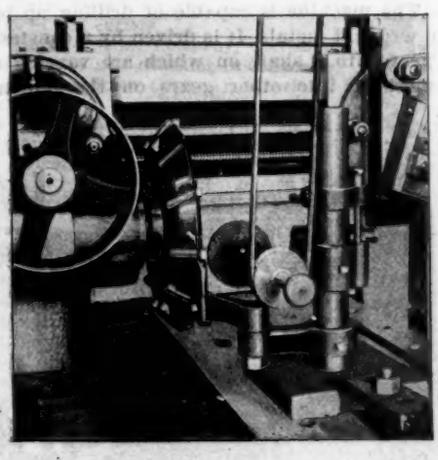


Fig. 2.

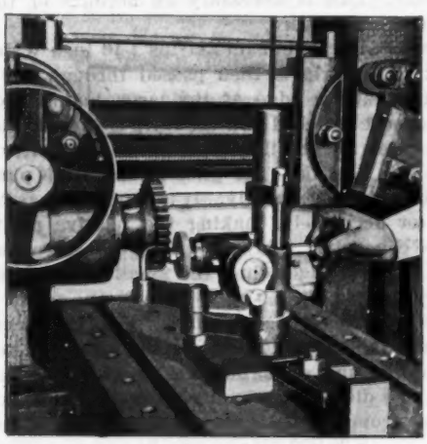


Fig. 3.

Grinder at Work.

THE FARWELL CUTTER GRINDER.

grinder spindle is ¾ x 11 inches, and carries a wheel ¾ x 6 inches. The spindle bearing is 5 inches long, is tapered and provided with means for taking up wear. The spindle has an end movement by hand of 2 inches, a horizontal adjustment by screw of 1½ inches, a vertical adjustment by screw of 1½ inches and a vertical adjustment by hand of 6 inches. The grinder weighs 60 pounds.

A Large New Plate Mill.—The Lukens Iron & Steel Company of Coatesville, Pa., are building a large new steel plate mill, with rolls 140 inches long in the body by 38 inches diameter, in addition to the 134 inch and 84 inch plate mills and 48-inch universal plate mills now comprising the plant. The building for this mill will be erected this fall, and the principal parts of the machinery have been under contract for many months. A. Garrison Foundry Company are building the mill and Robt. Wetherill & Co. of Chester, Pa., the 46 x 60 inch Corliss engine, with Tangye type of bed plate. There will be large continuous furnaces erected in the mill and also pit furnaces; the former will measure 40 inches long outside and 9 inches wide, inside measurement. The slabs will be pushed through continuously by an hydraulic or electric pusher. The mill will be equipped throughout with all the latest appliances and will have steam, hydraulic and electric power, and probably pneumatic power in addition for some work. This mill will have an annual capacity of over 100,000 tons of plates per year, and it will be supplied with slabs from the large slabbing mill which the Lukens Iron & Steel Company are just completing. This latter was designed by Julian Kennedy of Pittsburgh and was built originally for the Nicopol-Mariopol Mining & Metallurgical Company of Russia. With the completion of this mill they will have much the largest capacity for plates of any works in this country except the Carnegie works.

Making the East River Bridge Cables.

Special machinery is now being erected under the direction of W. Hildenbrand of the John A. Roebling's Sons Company for the construction of the cables of the new East River Bridge.

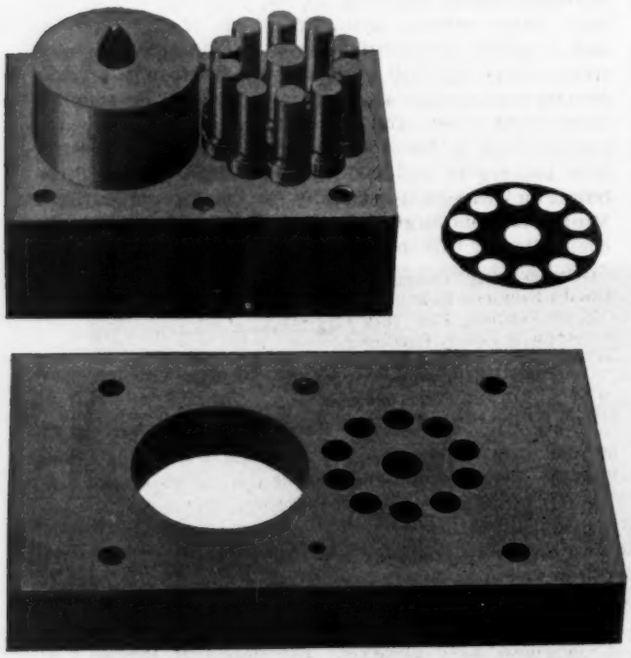
This machinery consists of an ordinary steam engine with proper shafting and gearing, which drives two endless wire ropes, which are stretched from anchorage to anchorage. There are driving sheaves, supporting deflecting sheaves and a tightening apparatus for making these ropes work properly. The object of this pair of endless wire ropes (which have a diameter of ¾ inch) is to take the cable wire across. For this purpose a light wheel is fastened to each rope, and the bight of a wire is placed in this wheel. The wheel travels with the rope from end to end of the bridge and carries two wires across at every trip.

The machinery will be in place in about a week, and actual cable making will begin soon thereafter.

The Pittsburgh & Lake Erie Railroad, running from Pittsburgh to Youngstown, will soon place an order with the Pressed Steel Car Company for 1000 additional steel hopper bottom coal cars. This road has been ordering new cars almost every month for two years, but traffic increases so rapidly that the road is nearly always short of cars for ore and coal transportation.

One-Operation Disk Die.

The American Hardware Mfg. Company, Ottawa, Ill., are establishing a reputation for ingenuity in the manufacture of sheet metal dies. The illustration herewith given shows a set of dies made by this company for piercing and blanking, in one operation, a steel disk used in cores of small armatures for dynamos and motors. In the manufacture of these dies the outer circle of small holes must be concentric with the small



ONE-OPERATION DISK DIE.

center hole. This is necessary on account of the high speed of the armature.

The steel sheet is cut into strips 1-16 inch wider than the disk. The strip is then passed through the die as far as the cutting edge of the large blank. Next the small holes are punched and the strip is passed to a gauge which locates the small hole about in the center of the large hole in the die. The pilot in the large punch fits the small center hole snugly. It is tapered so as to enter and center accurately, making the relative position of all holes concentric. To allow this the large punch is about 1-16 inch longer than the small punches, so that it centers the holes and cuts through the metal before the smaller punches begin cutting. This pilot method is not entirely new, but it provides a quick and accurate method of getting a quantity of small stampings at a low cost, the dies being simple, cheap and durable. The blank disk from the die is shown on one side of the illustration. About 30,000 blanks can be cut in a day of 10 hours.

The Marine Boiler Trade on the Great Lakes.—A prominent Chicago daily paper last week published some misleading information relative to the condition of the boiler trade along the great lakes, which will doubtless be widely copied, because of the peculiar situation which it set forth. It stated that marine boilers are so difficult to obtain, owing to the heavy demand, that a transportation company had been obliged to raise some sunken vessels to get the boilers to supply two boats which the company are having built. Marine boilers are always difficult to obtain, if quick delivery is desired, because it requires some time to make them, usually 60 to 90 days. Manufacturers of boilers admit that they are quite busy at present, but say that contracts for marine boilers will be freely taken for delivery during the winter, their capacity not being covered so far into the future as the report would make it appear. If boilers are urgently needed, or economy is a consideration, second-hand boilers are always sought. They can be used for marine purposes if in condition to pass the Government tests, the United States inspectors issuing certificates limiting the steam pressure which they will be permitted to carry.

The Diesel Engine.

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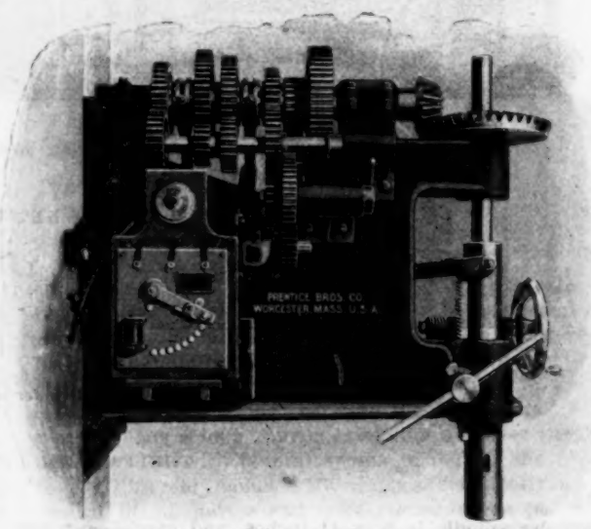
The Prentice Electrically Driven Boiler Makers' Drill.

The Prentice Bros. Company of Worcester, Mass., recently furnished the Government, for the Pensacola Yard, a boiler makers' drill, with direct connected motor and speed changes without the use of belt or electric controller. The machine may be belted to a column or wall at a convenient hight from the floor for the work intended. The pinion wheel, which feeds the rack on the sleeve of the spindle, is not driven on or keyed to the shaft, but is, with its shaft, one solid piece of steel. This construction is to give the necessary strength to the teeth of the pinion to resist heavy strains. The gear is unusually large and of coarse pitch. The spindle is counterbalanced and has the quick return motion, which is applied to all Prentice drills. The feed is by hand wheel. The machine is capable of drilling up to 4-inch holes in wrought metal. It is driven by a constant speed motor geared to a shaft on which are varying sizes of gears meshing into other gears on the pinion shaft.



THE PRENTICE ELECTRICALLY DRIVEN BOILER MAKERS' DRILL.

Speed changes are made by clutches throwing the different trains of gears into connection. It has, with this system of gearing and the usual back gears, eight changes of spindle speed. The company apply this system to other machines, and with it, when desired, a reverse motion, the reverse motion at an accelerated speed adapting the machines for tap driving. The machine occupies a space on the wall of 37 x 14 inches. Its weight is 1700 pounds. The distance from the wall to the center of the spindle is 38 inches.

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From the awards to manufactures of the United States we print the following:

MACHINERY SECTION.

Gold Medal.

MACHINE TOOLS.

Acme Machine Screw Company, Hartford, Conn., multiple spindle automatic screw machine.
American Tool Works Company, Cincinnati, Ohio, radial drill.
American Tool Works Company, Cincinnati, Ohio, lathe.
American Tool & Machine Company, Boston, Mass., centrifugal machine.
Bullard Machine Tool Company, Bridgeport, Conn., turret and engine lathe.
Bullard Machine Tool Company, Bridgeport, Conn., boring mill.
Bickford & Francis Belting Company, Buffalo, B, C and D grades of leather belting.
Bement, Miles & Co., Philadelphia, steam hammer.
Becker-Brainard Milling Machine Company, Hyde Park, Mass., vertical milling machine.
Brown & Sharpe Mfg. Company, Providence, R. I., No. 6 automatic gear cutting machine.
Brown & Sharpe Mfg. Company, Providence, R. I., drilling, reaming, milling and measuring tools.
Brown & Sharpe Mfg. Company, Providence, R. I., No. 00 automatic screw machine.
Cincinnati Machine Tool Company, Cincinnati, Ohio, upright drill.
Cincinnati Milling Machine Company, Cincinnati, Ohio, universal milling machine.
Cleveland Twist Drill Company, Cleveland, Ohio, twist drills, reamers and cutters.
Cleveland Machine Screw Company, Cleveland, Ohio, automatic turret lathe and chucking machine.
Cleveland Machine Screw Company, Cleveland, Ohio, worm milling machine.
Detrick & Harvey Machine Company, Baltimore, Md., boring, drilling and milling machinery.
Ferracute Machine Company, Bridgeton, N. J., stamping machinery.
Faneuil Watch Tool Company, Boston, watch makers' lathes and tools.
G. A. Gray Company, Cincinnati, Ohio, planers (metal).
L. S. Heald & Son, Barre, Mass., American twist drill grinders.
Long & Allstatter Company, Hamilton, Ohio, power punching and shearing machine.
Lodge & Shipley Machine Tool Company, Cincinnati, Ohio, engine lathe.
Landis Tool Company, Waynesboro, Pa., universal grinder.
Morton Mfg. Company, Muskegon, Mich., draw cut shapers.
Morse Twist Drill & Machine Company, New Bedford, Mass., machine tools.
Merrill Mfg. Company, Toledo, Ohio, pipe threading and cutting machine.
Niles Tool Works Company, Hamilton, Ohio, boring and turning machines.
Prentice Bros. Company, Worcester, Mass., drill.
Potter & Johnston Machine Company, Pawtucket, R. I., automatic universal independent chuck.
Pond Machine Tool Company, Plainfield, N. J., planer.
Pratt & Whitney Company, Hartford, Conn., drills, reamers, cutters and measuring tools.
Pratt & Whitney Company, Hartford, Conn., profiling machine.
Pratt & Whitney Company, Hartford, Conn., double head milling machine.
Wilmarth & Morman Company, Grand Rapids, Mich, drill grinding machine.
Warner & Swasey Company, Cleveland, Ohio, hollow hexagon turret lathe.
Washburn Shops, Worcester, Mass., drill grinders.

ENGINES, BOILERS AND PUMPS.

J. L. Alberger & Son, Buffalo, 125 horse-power Buffalo tandem gas engine.
Buffalo Forge Company, Buffalo, steam engines.
Lidgerwood Mfg. Company, New York City, bridge erecting engine.
Lazier Gas Engine Company, Buffalo, gas and gasoline engines.
Marinette Iron Works Mfg. Company, Marinette, Wis., Wallrath gas engine, 125 horse-power.
August Mietz, New York City, kerosene engine.
National Meter Company, New York City, gas engines.
Otto Gas Engine Works, Philadelphia, Pa., gas engines.
Rodney Hunt Machine Company, Orange, Mass., water wheels and pumps.

MISCELLANEOUS MACHINERY, BELTING, ETC.

Alexander Brothers, Philadelphia, brand Oak No. 1 leather belting.
American Steam Gauge & Valve Mfg. Company, Boston, steam gauges and engine fittings.
Austin & Eddy, Boston, Pioneer molding sander.
E. C. Atkins & Co., Indianapolis, Ind., machine saws.
American Steel & Wire Company, Chicago, diamond dies for drawing wire.
American Machine Company, Buffalo, sifting machine.
Buffalo Forge Company, Buffalo, blowers and fans.
Boston Belting Company, Boston, mechanical rubber goods.
Carborundum Company, Niagara Falls, N. Y., carborundum.
Chisholm-Moore Mfg. Company, Cleveland, Ohio, anti-friction differential chain hoist.
Coe Mfg. Company, Painesville, Ohio, rotary cutting veneer machine.
Dodge Mfg. Company, Mishawaka, Ind., rope transmission.
Forster Pulley Works, Fairport, N. Y., wood split pulleys.
Fayerweather & Ladew, New York City, Hoyt brand leather belting.
Hay-Budden Mfg. Company, Brooklyn, N. Y., anvils.
Jenkins Brothers, New York City, steam and water valves.
Jenkins Brothers, New York City, Jenkins' '96 sheet packing.
Knowlton & Beach, Rochester, N. Y., paper box machinery.
Lunkenheimer Company, Cincinnati, Ohio, valves, lubricators and engine fittings.
Lamb & Ritchie, Cambridgeport, Mass., lined pipe.
Morris Machine Works, Baldwinsville, N. Y., centrifugal pumping machine.
National Meter Company, New York City, water meters.
National Tube Company, Pittsburgh, Pa., tubes and pipes.
Pittsburgh Meter Company, E. Pittsburgh, Pa., water and gas meters.
Powers Regulator Company, Chicago, automatic temperature controlling apparatus.
Robbins Conveying Belt Company, New York City, belt conveyor.
Reeves Pulley Company, Columbus, Ind., variable speed transmission.
John A. Roebling's Sons Company, Trenton, N. J., power transmission (wire rope).
John A. Roebling's Sons Company, Trenton, N. J., wire.
Rider-Ericsson Engine Company, New York City, Ericsson engine.
Straight Line Engine Company, Syracuse, N. Y., steam engine.
Chas. A. Schieren & Co., New York City, Bull's Head, Electric and Royal Extra brands leather belting.
Struthers, Wells & Co., Warren, Pa., 300 horse-power gas engine.
Shelby Steel Tool Company, Cleveland, Ohio, seamless steel tubes.
L. S. Starrett Company, Athol, Mass., mechanical tools.
H. B. Smith Machine Company, Smithville, N. J., general wood working machinery.
United Shoe Machinery Company, Boston, shoe machinery.
United Shoe Machinery Company, Boston, welt lasting machine.
O. C. White Company, Worcester, Mass., appliances for shop lighting.
L. & I. J. White Company, Buffalo, knives for barrel, paper cutting, leather splitting, veneer cutting, machines, shear blades for metal and cutting dies for cloth and paper.
Western Tube Company, Kewanee, Ill., valves and cocks.
Henry R. Worthington, Brooklyn, N. Y., jet condenser.
Walworth Mfg. Company, Boston, Mass., valves, fittings and tools.

Silver Medals.

MACHINE TOOLS.

Bradford Machine Tool Company, Cincinnati, Ohio, engine lathe with turret attachment.
Brown & Sharpe Mfg. Company, Providence, R. I., No. 2 universal grinding machine.
Brown & Sharpe Mfg. Company, Providence, R. I., No. 2 universal milling machine.
Bement, Miles & Co., Philadelphia, vertical milling machines.
E. W. Bliss Company, Brooklyn, N. Y., sheet metal stamping and drawing machines.
Bickford Drill Tool Company, Cincinnati, Ohio, radial and multiple drill.
Belmer-Eames Tool Company, Cincinnati, Ohio, planers.
Cincinnati Planer Company, Cincinnati, Ohio, spur gear planers.
Diamond Machine Company, Providence, R. I., grinding and polishing machine.
Detrick & Harvey Machine Company, Baltimore, Md., 36-inch planers.
Fay & Scott, Dexter, Maine, universal turret and chucking machine.
Fox Machine Company, Grand Rapids, Mich., open side shapers.
Gisholt Machine Company, Madison, Wis., tool grinders.
Gisholt Machine Company, Madison, Wis., turret lathes.
Hoggson & Pettis Mfg. Company, New Haven, Conn., the Sweetland chuck.
L. S. Heald & Son, Barre, Mass., American lathe center grinder.
Geo. Juengst & Sons, Croton Falls, N. Y., shaping machine.
Landis Tool Company, Waynesboro, Pa., plain grinders.

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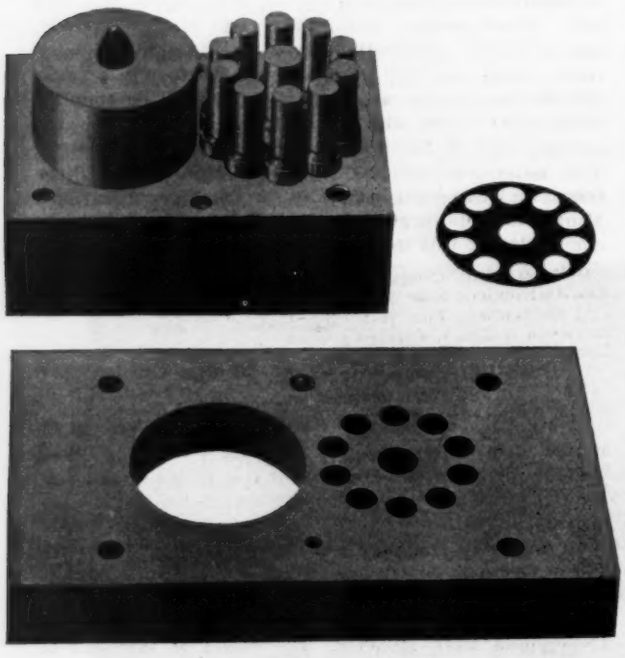

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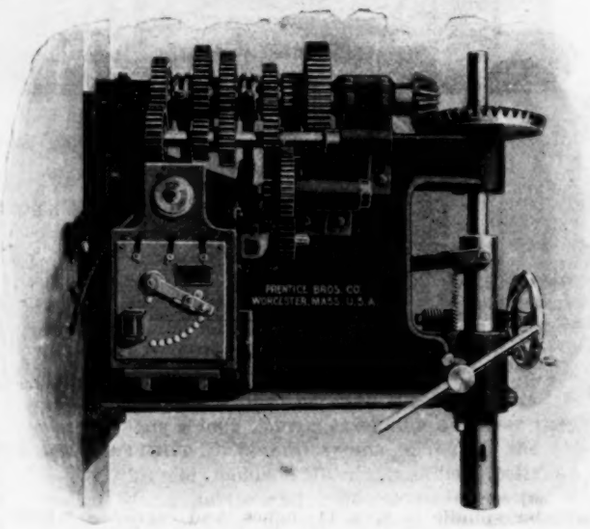

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Bullard Machine Tool Company, Bridgeport, Conn., boring mill.
Bickford & Francis Belting Company, Buffalo, B, C and D grades of leather belting.
Bement, Miles & Co., Philadelphia, steam hammer.
Becker-Brainard Milling Machine Company, Hyde Park, Mass., vertical milling machine.
Brown & Sharpe Mfg. Company, Providence, R. I., No. 6 automatic gear cutting machine.
Brown & Sharpe Mfg. Company, Providence, R. I., drilling, reaming, milling and measuring tools.
Brown & Sharpe Mfg. Company, Providence, R. I., No. 00 automatic screw machine.
Cincinnati Machine Tool Company, Cincinnati, Ohio, upright drill.
Cincinnati Milling Machine Company, Cincinnati, Ohio, universal milling machine.
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Cleveland Machine Screw Company, Cleveland, Ohio, automatic turret lathe and chucking machine.
Cleveland Machine Screw Company, Cleveland, Ohio, worm milling machine.
Detrick & Harvey Machine Company, Baltimore, Md., boring, drilling and milling machinery.
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L. S. Heald & Son, Barre, Mass., American twist drill grinders.
Long & Allstatter Company, Hamilton, Ohio, power punching and shearing machine.
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Landis Tool Company, Waynesboro, Pa., universal grinder.
Morton Mfg. Company, Muskegon, Mich., draw cut shapers.
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Merrill Mfg. Company, Toledo, Ohio, pipe threading and cutting machine.
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Pratt & Whitney Company, Hartford, Conn., drills, reamers, cutters and measuring tools.
Pratt & Whitney Company, Hartford, Conn., profiling machine.
Pratt & Whitney Company, Hartford, Conn., double head milling machine.
Wilmarth & Morman Company, Grand Rapids, Mich, drill grinding machine.
Warner & Swasey Company, Cleveland, Ohio, hollow hexagon turret lathe.
Washburn Shops, Worcester, Mass., drill grinders.

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Marinette Iron Works Mfg. Company, Marinette, Wis., Wallrath gas engine, 125 horse-power.
August Mietz, New York City, kerosene engine.
National Meter Company, New York City, gas engines.
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Austin & Eddy, Boston, Pioneer molding sander.
E. C. Atkins & Co., Indianapolis, Ind., machine saws.
American Steel & Wire Company, Chicago, diamond dies for drawing wire.
American Machine Company, Buffalo, sifting machine.
Buffalo Forge Company, Buffalo, blowers and fans.
Boston Belting Company, Boston, mechanical rubber goods.
Carborundum Company, Niagara Falls, N. Y., carborundum.
Chisholm-Moore Mfg. Company, Cleveland, Ohio, anti-friction differential chain hoist.
Coe Mfg. Company, Painesville, Ohio, rotary cutting veneer machine.
Dodge Mfg. Company, Mishawaka, Ind., rope transmission.
Forster Pulley Works, Fairport, N. Y., wood split pulleys.
Fayerweather & Ladew, New York City, Hoyt brand leather belting.
Hay-Budden Mfg. Company, Brooklyn, N. Y., anvils.
Jenkins Brothers, New York City, steam and water valves.
Jenkins Brothers, New York City, Jenkins' '96 sheet packing.
Knowlton & Beach, Rochester, N. Y., paper box machinery.
Lunkenheimer Company, Cincinnati, Ohio, valves, lubricators and engine fittings.
Lamb & Ritchie, Cambridgeport, Mass., lined pipe.
Morris Machine Works, Baldwinsville, N. Y., centrifugal pumping machine.
National Meter Company, New York City, water meters.
National Tube Company, Pittsburgh, Pa., tubes and pipes.
Pittsburgh Meter Company, E. Pittsburgh, Pa., water and gas meters.
Powers Regulator Company, Chicago, automatic temperature controlling apparatus.
Robbins Conveying Belt Company, New York City, belt conveyor.
Reeves Pulley Company, Columbus, Ind., variable speed transmission.
John A. Roebling's Sons Company, Trenton, N. J., power transmission (wire rope).
John A. Roebling's Sons Company, Trenton, N. J., wire.
Rider-Ericsson Engine Company, New York City, Ericsson engine.
Straight Line Engine Company, Syracuse, N. Y., steam engine.
Chas. A. Schieren & Co., New York City, Bull's Head, Electric and Royal Extra brands leather belting.
Struthers, Wells & Co., Warren, Pa., 300 horse-power gas engine.
Shelby Steel Tool Company, Cleveland, Ohio, seamless steel tubes.
L. S. Starrett Company, Athol, Mass., mechanical tools.
H. B. Smith Machine Company, Smithville, N. J., general wood working machinery.
United Shoe Machinery Company, Boston, shoe machinery.
United Shoe Machinery Company, Boston, welt lasting machine.
O. C. White Company, Worcester, Mass., appliances for shop lighting.
L. & I. J. White Company, Buffalo, knives for barrel, paper cutting, leather splitting, veneer cutting, machines, shear blades for metal and cutting dies for cloth and paper.
Western Tube Company, Kewanee, Ill., valves and cocks.
Henry R. Worthington, Brooklyn, N. Y., jet condenser.
Walworth Mfg. Company, Boston, Mass., valves, fittings and tools.

Silver Medals.

MACHINE TOOLS.

Bradford Machine Tool Company, Cincinnati, Ohio, engine lathe with turret attachment.
Brown & Sharpe Mfg. Company, Providence, R. I., No. 2 universal grinding machine.
Brown & Sharpe Mfg. Company, Providence, R. I., No. 2 universal milling machine.
Bement, Miles & Co., Philadelphia, vertical milling machines.
E. W. Bliss Company, Brooklyn, N. Y., sheet metal stamping and drawing machines.
Bickford Drill Tool Company, Cincinnati, Ohio, radial and multiple drill.
Belmer-Eames Tool Company, Cincinnati, Ohio, planers.
Cincinnati Planer Company, Cincinnati, Ohio, spur gear planers.
Diamond Machine Company, Providence, R. I., grinding and polishing machine.
Detrick & Harvey Machine Company, Baltimore, Md., 36-inch planers.
Fay & Scott, Dexter, Maine, universal turret and chucking machine.
Fox Machine Company, Grand Rapids, Mich., open side shapers.
Gisholt Machine Company, Madison, Wis., tool grinders.
Gisholt Machine Company, Madison, Wis., turret lathes.
Hoggson & Pettis Mfg. Company, New Haven, Conn., the Sweetland chuck.
L. S. Heald & Son, Barre, Mass., American lathe center grinder.
Geo. Juengst & Sons, Croton Falls, N. Y., shaping machine.
Landis Tool Company, Waynesboro, Pa., plain grinders.

Morton Mfg. Company, Muskegon, Mich., key seating machines.
Norton Emery Wheel Company, Worcester, Mass., Bath machine indicators.
Niles Tool Works Company, Hamilton, Ohio, radial drills.
Niagara Machine & Tool Company, Buffalo, N. Y., sheet metal tools.
Oneida National Chuck Company, Oneida, N. Y., lathe and drill chucks.
W. W. Oliver Mfg. Company, Buffalo, jewelers' machinery.
Potter & Johnston Company, Pawtucket, R. I., shaping machines.
Potter & Johnston Company, Pawtucket, R. I., Simplex automatic chucking machine.
Prentiss Tool & Supply Company, New York City, general arrangement of exhibit of machine tools.
Prentice Bros. Company, Worcester, Mass., lathe.
Pratt & Whitney Company, Hartford, Conn., automatic turret lathes.
Pratt & Whitney Company, Hartford, Conn., compound boring machine.
Pratt & Whitney Company, Hartford, Conn., automatic tool makers' lathe.
Rogers & Hemphill Machine Company, Alfred, N. Y., vertical boring and turning mill.
Samuel C. Rogers & Co., Buffalo, grinding machinery.
Warner & Swasey Company, Cleveland, Ohio, vertical boring and chucking machines.

ENGINES, BOILERS AND PUMPS.

Ames Iron Works, Oswego, N. Y., automatic steam engines.
Ball Engine Company, Erie, Pa., steam engine.
Bessemer Gas Engine Company, Globe City, Pa., double cylinder two-cycle gas engine.
Buffalo Gasoline Motor Works, Buffalo, gasoline motor.
A. S. Cameron Pump Works, New York City, steam and air pumps.
Deane Steam Pump Company, Holyoke, Mass., condensers.
Deane Steam Pump Company, Holyoke, Mass., power pumps.
Fitchburg Steam Engine Company, Fitchburg, Mass., steam engine.
Foos Mfg. Company, Springfield, Ohio, gas and gasoline engines.
Kieley & Mueller, New York City, steam specialties.
Lane & Bodley Company, Cincinnati, Ohio, Corliss steam engine.
Taber Pump Company, Buffalo, rotary pumps.

MISCELLANEOUS MACHINERY, BELTING, ETC.

American Steel & Wire Company, Chicago and New York City, cold drawn shafting.
American Blower Company, Detroit, Mich., fans and blowers.
American Machine Company, Buffalo, elevator bucket.
American Pulley Company, Philadelphia, Pa., the American pulley.
American Roller Bearing Company, Boston, Mass., roller bearings.
Buffalo Forge Company, Buffalo, punches, shears and forges; induced draft; blacksmiths' drills.
Beattie Machine Works, Cohoes, N. Y., collar and cuff machines.
Beattie Machine Works, Cohoes, N. Y., looper.
Burt Mfg. Company, Akron, Ohio, oil filters.
Chapman Double Ball Bearing Company, New York City, double ball bearing.
Cochrane Company, Lorain, Ohio, refrigerating and ice making machinery.
Chicago Pneumatic Tool Company, Chicago, pneumatic tools and appliances.
Chisholm & Moore Mfg. Company, Cleveland, Ohio, pneumatic drills.
Covel Mfg. Company, Chicago, automatic saw sharpeners.
Contractors' Plant Mfg. Company, Buffalo, hoisting machinery and derrick fittings.
Dodge Mfg. Company, Mishawaka, Ind., iron split pulleys.
Dodge Mfg. Company, Mishawaka, Ind., wood split pulleys.
S. R. Dresser, Bradford, Pa., pipe couplings.
Estate of W. S. Doig, Brooklyn, N. Y., box nailing machinery.
Diamond Drill & Machine Company, Birdsboro, Pa., belt lacing machines.
Eddy Valve Company, Waterford, N. Y., gate valves.
Eddy Valve Company, Waterford, N. Y., Eddy fire hydrant.
Fulton Pulley Company, Fulton, N. Y., wood pulleys.
Field Force Pump Company, Lockport, N. Y., spraying machinery.
Foos Mfg. Company, Springfield, Ohio, attrition grinding mills and crushers.
Fairbanks Company, Buffalo, steam valves.
Fox Machine Company, Grand Rapids, Mich., dado saws.
Greene Fuel Economizer Company, Matteawan, N. J., fuel economizer.
L. S. Heald & Son, Barre, Mass., sash trimmers.
Jenkins Brothers, New York City, Jenkins' pump valves and disk.
Hazard Mfg. Company, Wilkes-Barre, Pa., wire rope.
Lancaster Machine & Knife Works, Lancaster, N. Y., knives for wood planers, veneer cutting machines and barrel machines.
Munson Bros. Company, Utica, N. Y., mill machinery.
Munson Bros. Company, Utica, N. Y., water wheels.
New York Leather Belting Company, New York City, Victor brand leather belting.
Wm. Powell Company, Cincinnati, Ohio, oil cups and valves.
Philadelphia Pneumatic Drill Company, Philadelphia, pneumatic tools.
Reeves Pulley Company, Columbus, Ind., wood split pulleys.
Russell, Birdsall & Ward Bolt & Nut Company, Port Chester, N. Y., wrought iron bolts, nuts and rivets.
Scott & Williams, Philadelphia, Pa., knitting and finishing machinery.
Standard Tool Company, Cleveland, Ohio, twist drills, reamers, milling cutters and taps.
J. H. Williams Company, Brooklyn, N. Y., drop forged wrenches and chain pipe wrenches.
S. S. Wenzell Machine Company, Philadelphia, bottle washing machine.
Wheeler Condenser & Engineering Company, New York City, Admiralty surface condenser, with combined air and circulating pump.
Weber Gas Engine Company, Kansas City, Mo., gas and hoisting engines.
Western Tube Company, Kewanee, Ill., structural tubing.

Bronze Medals.

MACHINE TOOLS.

American Tool Works Company, Cincinnati, Ohio, planers.
American Tool Works Company, Cincinnati, Ohio, shaper.
Becker-Brainard Milling Machine Company, Hyde Park, Mass., horizontal drill.
David Bell Engineering Works, Buffalo, steam hammers.
Brown & Sharpe Mfg. Company, Providence, R. I., plain milling machine.
Brown & Sharpe Mfg. Company, Providence, R. I., plain grinding machine.
Brown & Sharpe Mfg. Company, Providence, R. I., universal milling machine.
B. F. Barnes Company, Rockford, Ill., wet tool grinder.
Cleveland Machine Screw Company, Cleveland, Ohio, brass work lathes.
Cataract Tool & Optical Company, Buffalo, precision lathe and attachment.
Detrick & Harvey Machine Company, Baltimore, Md., automatic bolt cutter.
Fox Machine Company, Grand Rapids, Mich., drill presses.
Norton Emery Wheel Company, Worcester, Mass., Walker universal tool and cutter grinder.
Pratt & Whitney Company, Hartford, Conn., cock and key machine.
Pratt & Whitney Company, Hartford, Conn., centering machine.
Pond Machine Tool Company, Plainfield, N. J., lathe.
Whitney Mfg. Company, Hartford, Conn., hand and screw feed milling machine.
Wheeling Mold & Foundry Company, Wheeling, W. Va., glass blowing machine.

MISCELLANEOUS MACHINERY, BELTING, ETC.

American Pulley Company, Philadelphia, wrought steel split pulley.
American Ice Company, Philadelphia, ice tools and appliances.
Atlas Pipe Wrench Company, New York and San Francisco, Atlas pipe wrenches.
Atlas Pipe Wrench Company, New York and San Francisco, tube cleaners for water tube boilers.
E. C. Atkins & Co., Indianapolis, Ind., knives.
Bessemer Gas Engine Company, Grove City, Pa., friction clutch.
Bashlin & Co., Warren, Pa., valves and oil cups.
Bierbaum & Merrick Metal Company, Buffalo, Lumen (a bronze for bearings).
Blodgett Mfg. Company, Buffalo, machinists' gauges.
Buffalo Meter Company, Buffalo, water meters.
Cyclone Grate Bar Company, Buffalo, Cyclone grate bar.
Chicago Belting Company, Chicago, Reliance brand leather belting.
Chisholm & Moore Mfg. Company, Cleveland, Ohio, pneumatic crane.
Chandler & Co., Ayer, Mass., accordion plaiting machine.
Coates Clipper Mfg. Company, Worcester, Mass., shearing and clipping machines.
Cunningham Mfg. Company, Philadelphia, Pa., bottle soaking and sterilizing wheels.
Dodge Mfg. Company, Mishawaka, Ind., friction clutches.
Fox Machine Company, Grand Rapids, Mich., universal trimmers.
A. A. Griffing Iron Company, New York City, steam separating traps (Bundy).
Garlock Packing Company, Palmyra, N. Y., Garlock packing.
Harrison Safety Boiler Works, Philadelphia, Pa., Cochrane steam and oil separator.
Harrison Safety Boiler Works, Philadelphia, Pa., drainage system for vacuum oil separator.
Ferdinand W. Hofele, New York City, fire escape.
Howard Iron Works, Buffalo, vises.
Howard Iron Works, Buffalo, bolt cutters.
Jacobson Machine Mfg. Company, Warren, Pa., clutch pulley.
Robert A. Keasbey, Buffalo, magnesia covering.
Lidgerwood Mfg. Company, New York City, reverse drum swinging gear.
Monarch Mfg. Company, Waterbury, Conn., safety engine stop valves.
Monarch Fire Appliance Company, New York City, Kilfyre dry powder fire extinguisher.
Moran Flexible Steam Joint Company, Louisville, Ky., flexible joints.
Nemes Bros., Troy, N. Y., shaking grate.
Norton Emery Wheel Company, Worcester, Mass., bench and floor grinding machinery.
National Pipe Bending Company, New Haven, Conn., coils of iron, brass and copper pipe.

Oneida Steel Pulley Company, Oneida, N. Y., steel pulleys.
Peerless Belt Lacing Company, Philadelphia, Peerless belt lacing.
George D. Rollins & Co., Philadelphia, Rollins' metallic piston rod packing.
Replogle Governor Works, Akron, Ohio, water wheel governors.
Ross Valve Company, Troy, N. Y., engines for organs.
Rheinstrom Bros., Cincinnati, Ohio, Karl Keiffer multiple perfection filters.
A. C. Rowe, New York City, Underwriters' fire extinguisher.
Roovers Bros., Brooklyn, N. Y., name plate machine.
Sherwood Mfg. Company, Buffalo, injector and boiler tube cleaners.
H. B. Sackett Screen Company, Chicago, means for screening and handling coal.
Trimont Mfg. Company, Roxbury, Mass., pipe tools.
Underfeed Stoker Company of America, Chicago, Jones underfeed stoker.
Vulcan Iron Works, Chicago, pile driving machinery.
Wilmarth & Morman Company, Grand Rapids, Mich., friction countershaft.
Wm. T. Wood & Co., Arlington, Mass., ice tools.
Whitney Mfg. Company, Hartford, Conn., chain.

ENGINES, BOILERS AND PUMPS.

Abendroth & Root Mfg. Company, New York City, improved Root water tube safety boiler.
American Blower Company, Detroit, Mich., blower engine.
Knowles Steam Pump Works, New York City, triplex electric pump.
Murray Iron Works, Burlington, Iowa, compound Corliss engine.
Otto Gas Engine Works, Philadelphia, Otto railroad water crane.
Skinner Engine Company, Erie, Pa., steam engine.
Snow Steam Pump Works, Buffalo, steam pumps.
Watertown Engine Company, Watertown, N. Y., Corliss engine.

Honorable Mention.

Abendroth & Root Mfg. Company, New York City, Root's spiral riveted pipe.
American District Steam Company, Lockport, N. Y., underground system of steam heating from central station.
Buffalo Emery Wheel Company, Buffalo, emery wheel foot power grinder.
Brainard & Armstrong Company, New London, Conn., reeling machine.
Bement-Miles Company, Philadelphia, Pa., key-seat cutter.
Belding Bros. & Co., New York City, thread measuring device.
Becker-Brainard Milling Machine Company, Hyde Park, Mass., grinding machine.
Brown & Sharpe Mfg. Company, Providence, R. I., cutter and reamer grinding machine.
Cling-Surface Mfg. Company, Buffalo, Cling-Surface belt dressing.
J. B. & J. M. Cornell, New York City, blowers and exhausters.
Cincinnati Milling Machine Company, Cincinnati, Ohio, universal cutter and reamer grinder.
Dodge Mfg. Company, Mishawaka, Ind., wood rim, iron hub, pulleys.
Fox Machine Company, Grand Rapids, Mich., milling machine.
Harrison Safety Boiler Works, Philadelphia, Cochrane feed water heater and purifier.
Hickman-Melhorn Company, Pittsburgh, Pa., combination vise and pipe wrench.
Kensington Engine Works, Philadelphia, Beckham regulating system.
Kennedy Valve Company, New York City, iron and brass valves.
South Bend Pulley Company, South Bend, Ind., wood split pulleys with iron hubs.
Vincent Valve Company, Sandusky, Ohio, globe and gate valves.
Warner & Swasey Company, Cleveland, Ohio, special milling machine.

AGRICULTURAL IMPLEMENTS.

Gold Medals.

David Bradley Mfg. Company, Bradley, Ill., plows.
Bucher & Gibbs Company, Canton, Ohio, plows and harrows.
Bickford & Huffman, Macedon, N. Y., grain drills.
Buffalo Pitts Company, Buffalo, engines and threshing machinery.
Buffalo Pitts Company, Buffalo, farm tools.
Buffalo Pitts Company, Buffalo, steam road roller.
Collins Plow Company, Quincy, Ill., hay presses.
Coldwell Lawn Mower Company, Newburg, N. Y., lawn mowers.
Deere & Co., Moline, Ill., plows and cultivators.
Deere & Mansur Company, Moline, Ill., agricultural implements.
De Laval Separator Company, New York City, centrifugal cream separators.
Empire Drill Company, Shortsville, N. Y., grain drills.
A. B. Farquhar Company, York, Pa., Mexican thresher.
Frick Company, Waynesboro, Pa., thresher and stacker.
Genesee Valley Mfg. Company, Mount Morris, N. Y., grain drills.
Hoover, Prout & Co., Avery, Ohio, potato digger.
Iowa Farming Tool Company, Fort Madison, Iowa, forks, cradles and snaths.
F. E. Myers & Bro., Ashland, Ohio, farm pumps.
P. P. Mast & Co., Springfield, Ohio, grain drills.
Oliver Chilled Plow Works, South Bend, Ind., walking plows.
Oliver Chilled Plow Works, South Bend, Ind., gang and sulky plows.
Syracuse Plow Company, Syracuse, N. Y., plows and harrows.
Geo. L. Squier Mfg. Company, Buffalo, sugar mills.
Geo. L. Squier Mfg. Company, Buffalo, coffee and rice machinery.
Supplee Hardware Company, Philadelphia, lawn mowers.
Vermont Farm Machine Company, Bellows Falls, Vt., U. S. cream separator, Babcock tester and Davis swing churn.
Withington & Cooley Mfg. Company, Jackson, Mich., hand, farm and garden tools.
Wiard Plow Company, Batavia, N. Y., plows.

Silver Medals.

American Grass Twine Company, St. Paul, Minn., harvesters.
American Steel & Wire Company, Chicago, woven wire fencing.
David Bradley Mfg. Company, Bradley, Ill., corn planter.
Brunswick Refrigerating Company, New Brunswick, N. J., refrigerating machine.
Coldwell Lawn Mower Company, Newburg, N. Y., motor mower.
Deere & Mansur Company, Moline, Ill., corn planter.
Dowden Mfg. Company, Prairie City, Iowa, potato digger and sorter.
Expansion Tree Protector Company, Rochester, N. Y., expansive tree protector.
A. B. Farquhar Company, York, Pa., corn planter.
Frick Company, Waynesboro, Pa., Eclipse portable and traction engines.
Huntley Mfg. Company, Silver Creek, N. Y., counter for mills.
Holt Mfg. Company, Stockton, Cal., model combined harvester and thresher.
Hartman Mfg. Company, Ellwood City, Pa., fences, mats and tree guards.
Iron Clad Mfg. Company, New York City, milk cans and dairy supplies.
J. S. Kemp Mfg. Company, Newark Valley, N. Y., manure spreader.
Kemp & Burpee Mfg. Company, Syracuse, N. Y., manure spreader.
Louden Machinery Company, Fairfield, Iowa, hay carriers and forks.
Marilla Incubator Company, Rose Hill, N. Y., incubators and brooders.
Oneida Community, Limited, Kenwood, N. Y., halter chain, cattle tie and stall fixtures.
John A. Roebling's Sons Company, Trenton, N. J., woven wire fencing.
Rossman Wire Fence Company, Rossmans, N. Y., wire fence.
A. H. Reid, Philadelphia, Pa., cream separator and churn.
Star Milk Cooler Company, Haddonfield, N. J., sanitary dairy apparatus.
P. M. Sharples, Philadelphia, Pa., cream separator.
Stockton Incubator Company, Stockton, Cal., incubators.
Wiard Plow Company, Batavia, N. Y., spading harrow.

Bronze Medals.

M. Campbell Fanning Mill Company, Detroit, Mich., fanning mill, with bagging attachment.
Huntley Mfg. Company, Silver Creek, N. Y., grain cleaning machinery.
Mason, Alex., Joliet, Ill., automatic gate.
A. H. Reid, Philadelphia, dairy machinery and supplies.
P. M. Sharples, Westchester, Pa., cream separators and dairy and creamery appliances.

Honorable Mention.

Bowen Castle Stay Fence Company, Norwalk, Ohio, Bowen Castle stay fence machine.
Bowen Castle Stay Fence Company, Norwalk, Ohio, Bowen Castle stay fence.
Bowen Castle Stay Fence Company, Norwalk, Ohio, Millet's combined reed and wire straightener.

MINES AND METALLURGY.

Gold Medals.

American Steel & Wire Company, Chicago, Ill., steel and finished steel products.
Edward G. Acheson, Niagara Falls, artificial graphite and carborundum.
Cleveland Stone Company, Cleveland, Ohio, sandstone used in architecture and grindstones.
Lidgerwood Mfg. Company, New York City, hoisting and mining engines.
Norton Emery Wheel Company, Worcester, Mass., corundum wheels.
Pike Mfg. Company, Pike Station, N. H., corundum specimens and products.
Rand Drill Company, New York City, rock drills, tripod, quarry and shaft bars and drift bolt driver and air hammers.
Paul S. Reeves & Son, Philadelphia, bronze, babbitt metals and castings.
Rogers, Brown & Co., Buffalo, raw material, pig iron and products.

Silver Medals.

Baker & Co., Newark, N. J., platinum metals and products.
Diamond Drill & Machine Company, Birdsboro, Pa., diamond drill and ore and rock crusher.
H. W. Johns Mfg. Company, New York City, exhibit showing evolution of asbestos.
Mine & Smelter Supply Company, Denver, Col., Durkee electrically driven rock drill.

Bronze Medals.

McKenna Bros., Pittsburgh, Pa., laboratory ore grinder.
Manistique Iron Company, Manistique, Mich., charcoal iron.

ELECTRICAL DIVISION.

Gold Medals.

American Steel & Wire Company, Chicago and New York City, electric wires and cables.
General Electric Company, Schenectady, N. Y., machinery and apparatus for generating and using electricity.
General Electric Company, Schenectady, N. Y., electric lighting apparatus
General Electric Company, Schenectady, N. Y., electrical measuring instruments.
Pittsburgh Reduction Company, Niagara Falls, N. Y., electrical conductors of aluminum.
J. A. Roebling's Sons & Co., Trenton, N. J., wires and cables.
Safety Ins. Wire & Cable Company, New York City, electric wires and cables.
Standard Underground Cable Company, Pittsburgh, Pa., electric wires and cables.
Stanley Electric Mfg. Company, Pittsfield, Mass., high tension alternating current apparatus.
Stanley Instrument Company, Great Barrington, Mass., electric wattmeters.

Silver Medals.

American Clock Company, Chicago, electric clocks.
E. G. Bernard Company, Troy, N. Y., motor generator sets and accessories.
Bullock Electric Mfg. Company, Cincinnati, Ohio, dynamos and motors.
Crocker-Wheeler Company, Ampere, N. J., dynamos and motors.
Cutler-Hammer Mfg. Company, Milwaukee, Wis., motor starters and controllers.
D. & W. Fuse Company, Providence, R. I., fuses and fuse fittings.
Edison Mfg. Company, Orange, N. J., Edison-Lalande battery.
Electric Storage Battery Company, Philadelphia, methods and appliances for the distribution of electric energy.
Electric Storage Battery Company, Philadelphia, storage batteries.
Eureka Tempered Copper Works, North East, Pa., tempered copper and cast copper.
Gould Storage Battery Company, New York City, storage battery.
Hazard Mfg. Company, Wilkes-Barre, Pa., insulated wire and cables.
Northern Electrical Mfg. Company, Madison, Wis., direct current dynamos and motors.
Stanley Electric Mfg. Company, Pittsfield, Mass., measuring instruments.
Wagner Electric Mfg. Company, St. Louis, single phase motors and transformers.

Bronze Medals.

American Engine Company, Bound Brook, N. J., direct connected dynamos.
Dicke Tool Company, Downers Grove, Ill., electric wiremen's tools.
Jantz & Leist, Cincinnati, Ohio, electroplating dynamos and driving motor.
Keystone Electric Company, Erie, Pa., direct current generator.
Morris Electric Company, New York City, Morris rail bond and hydraulic splicing machine.
Onondaga Dynamo Company, Syracuse, N. Y., direct connected dynamo and electric motors.
Submerged Electric Motor Company, Menominee, Wis., submerged electric motor and propeller.

Honorable Mention.

American Watchman's Time Detector Company, New York City, watchman's time detector.
Chicago Fuse, Wire & Mfg. Company, Chicago, fuse wires and links.
Edison Mfg. Company, Orange, N. J., 9-inch battery fan motor.
Jandus Electric Company, Cleveland, Ohio, electric fan motor.
Robbins & Myers Company, Springfield, O., dynamos and motors.
Sprague Electric Company, New York City, electric motors.
Stow Mfg. Company, Binghamton, N. Y., multi-speed motor and flexible shaft.
O. C. White Company, Worcester, Mass., adjustable lamp arm.

TRANSPORTATION.

Gold Medals.

Automobile Company of America, New York City, gasmobile.
Baldwin Locomotive Works, Philadelphia, Pa., steam and electric locomotives.
Brooks Locomotive Works, Dunkirk, N. Y., locomotives.
Bucyrus Steam Shovel Company, South Milwaukee, Wis., steam shovel.
J. G. Brill Company, Philadelphia, Pa., cars and trucks for electric roads.
Consolidated Railroad, Electric Light & Equipment Company, New York City, car light by electric power from the axle.
De Dion-Bouton Motorette Company, Brooklyn, N. Y., motorettes, bicycles and quadricycles.
Electric Vehicle Company, New York City, electric vehicles (variety and completeness).
Electric Vehicle Company, New York City, electric automobiles.
General Electric Company, Schenectady, N. Y., electric traction apparatus and system.
Gas Engine & Power Company and Charles L. Seabury & Co., Morris Heights, New York City, launches, engine models.
Gould Coupler Company, Depew, N. Y., car light by electric power from axle.
Howard Iron Works, Buffalo, elevators.
Locomobile Company of America, New York City, locomobiles.
Lidgerwood Mfg. Company, New York City, coaling ships at sea.
Lidgerwood Mfg. Company, New York City, electric ship's winch.
Mobile Company of America, Tarrytown, N. Y., mobiles.
New York Car Wheel Works, Buffalo, cast iron car wheels.
Pressed Steel Car Company, Pittsburgh, Pa., pressed steel cars.
Geo. N. Pierce Company, Buffalo, bicycles.
Pennsylvania Rubber Company, Erie, Pa., rubber tires and mechanical rubber goods.
John A. Roebling's Sons Company, Trenton, N. J., general exhibit in transportation.
Safety Car Heating & Lighting Company, New York City, gas lighting for cars and buoys.
Schenectady Locomotive Works, Schenectady, N. Y., locomotives.
Standard Railway Signal Company, Troy, N. Y., railroad signal apparatus.

Silver Medals.

Bierbaum & Merrick Metal Company, Buffalo, Ideal trolley wheel.
Baker Motor Vehicle Company, Cleveland, Ohio, electric runabout.
Consolidated Car Heating Company, Albany, N. Y., heating apparatus for steam and electric cars.
Eclipse Mfg. Company, Elmira, N. Y., Morrow coaster and brake.
Goodwin Car Company, New York City, Goodwin bins.
Gold Car Heating Company, New York City, car heating apparatus.
Goodyear Tire & Rubber Company, Akron, Ohio, rubber tires.
Gould Coupler Company, Depew, N. Y., car couplers and platforms.
Haynes-Apperson Company, Kokomo, Ind., hydrocarbon automobiles.
McGuire Mfg. Company, Chicago, Ill., car track sweeper.
McGuire Mfg. Company, Chicago, trucks and appliances for electric cars.
Michigan Yacht & Power Company, Detroit, Mich., launch, gasoline engine and awning.
New York Air Brake Company, New York City, New York air brake
Overman Automobile Company, New York City, steam automobiles.
Pennsylvania Iron Works Company, marine motors.
Richmond Locomotive Works, Richmond, Va., compound locomotive.
Revere Rubber Company, Boston, rubber vehicle tires and air cushion horseshoe pad.
Standard Steel Works, Philadelphia, steel tires and wheels and frames.
Sterlingworth Railway Supply Company, Easton, Pa., rolled steel coal car.
Simplex Railway Appliance Company, Hammond, Ind., Simplex bolsters for freight cars.
Safety Car Heating & Lighting Company, New York City, steam heating for railway cars.
Twentieth Century Mfg. Company, New York City, bicycle, cab and automobile lamps, and special purpose hand lanterns.
Universal Coaster Brake Company, Buffalo, coaster brakes.
U. S. Hame Company, Buffalo, wood hame.
Veeder Mfg. Company, Hartford, Conn., cyclometers, odometers, counters and fine castings.
Woods Motor Vehicle Company, Chicago, automobiles.

Bronze Medals.

Buckeye Malleable Iron & Coupler Company, Columbus, Ohio, freight car couplers.
Buffalo Metal Goods Company, Buffalo, coaster brakes.
Continuous Rail Joint Company of America, Newark, N. J., rail joints for steam and street railroads.
Chisholm & Moore Mfg. Company, Cleveland, Ohio, American standard railroad joint.
C. Cowles & Co., New Haven, Conn., carriage hardware and mountings.
Emery Tire Company, Providence, R. I., puncture proof bicycle tires.
Electric Vehicle Company, New York City, gasoline automobile.
Fiske Rubber Company, Chicopee Falls, Mass., bicycle, vehicle and automobile tires.
Goodwin Car Company, New York City, Goodwin cars.
Goodyear Tire & Rubber Company, Akron, Ohio, rubber horseshoe pads.
Michael Hallanan, New York City, Hallanan star pad.
Kidder Motor Vehicle Company, New Haven, Conn., motor vehicles.
National Cycle Mfg. Company, Bay City, Mich., National bicycles.
Noera Mfg. Company, Waterbury, Conn., steel and brass oilers, pumps, wrenches and cyclometers.
Simplex Railway Appliance Company, Hammond, Ind., Susemihl roller side bearing.
Truscott Boat Mfg. Company, St. Joseph, Mich., launches, motors, rowboats.
E. R. Thomas Motor Company, Buffalo, motor bicycles and vehicles.
Weber Railway Joint Mfg. Company, New York City, rail joints.

Honorable Mention.

American Motor Company, New York City, launch and motor.
Buffalo Electric Carriage Company, Buffalo, electric carriages.

Consolidated Hoof Pad Company, New York City, Climax hoof pad.
Eastman Automobile Company, Cleveland, Ohio, metallic automobile bodies.
O. M. Edwards Company, Syracuse, N. Y., Edwards railway devices.
Morris Electric Company, New York City, wheel truing brake shoe.
Palmer Bros., Mianus, Conn., gasoline engines and launches.
Selle Gear Company, Akron, Ohio, spring wagon gear.
Stearns Steam Carriage Company, Syracuse, N. Y., steam carriages.

MANUFACTURES.

Gold Medals.

American Wringer Company, New York City, clothes wringers.
American Steel & Wire Company, New York and Chicago, wire nails and miscellaneous springs.
American Steel & Wire Company, New York and Chicago, flat steel springs.
E. C. Atkins & Co., Indianapolis, Ind., saws, knives and saw tools.
Bissell Carpet Sweeper Company, New York City and Grand Rapids, Mich., carpet sweepers.
Bommer Bros., Brooklyn, spring hinges on pictures in operation.
Bryden Horse Shoe Company, Catasauqua, Pa., horseshoes.
Buffalo Scale Company, Buffalo, Buffalo scales.
Geo. M. Clark & Co., Chicago, gas and gasoline stoves.
Corbin Cabinet Lock Company, New Britain, Conn., locks and post office equipment and rural delivery boxes.
Cary Safe Company, Buffalo, safes and vaults.
Enterprise Mfg. Company of Pennsylvania, Philadelphia, food choppers, fruit presses and mills.
Hibbard-Rodmar-Ely Safe Company, New York City, burglar proof safes and vaults.
Iron Clad Mfg. Company, New York City, enameled and galvanized iron ware.
Michigan Stove Company, Detroit, stoves and ranges.
New York Belting & Packing Company, New York City, interlocking rubber tile flooring.
Pittsburgh Reduction Company, Pittsburgh, aluminum.
Isaac Emerson Palmer, Middletown, Conn., hammocks and appurtenances.
Stanley Works, New Britain, Conn., builders' hardware.
Stewart Hartshorn Company, East Newark, N. J., wood and tin spring rollers.
Taylor Iron & Steel Company, High Bridge, N. J., manganese steel.
J. H. Williams & Co., Brooklyn, drop forgings and special designs.

Silver Medals.

Abendroth Bros., New York City, steam and hot water heaters.
Abendroth Bros., New York City, gas ranges.
Buffalo Mfg. Company, Buffalo, nickeled brass and japanned wares.
Cleveland Ball & Screw Company, Cleveland, Ohio, steel balls.
Cattaraugus Cutlery Company, Little Valley, N. Y., cutlery.
Philip F. Carroll, Joliet, Ill., bakery machinery.
Excelsior Machine Company, Buffalo, brass and steel balls.
Grant Tool Company, Franklin, Pa., brass and steel balls.
Gem Cutlery Company, New York City, Gem safety razor.
E. Howard Clock Company, Boston, the Howard watchman's clock.
James Heekin & Co., Cincinnati, Ohio, Kim-Hee quick coffee pot.
Iron Clad Mfg. Company, New York City, steel storage and shipping barrels.
Iron Clad Mfg. Company, New York City, cold weld range boilers.
Jewett & Co., Buffalo, stoves and ranges.
Kelsey Furnace Company, Syracuse, N. Y., warm air generators.
Kampfe Bros., New York City, safety razors.
L. O. Koven & Bro., New York City, hot water boiler, with coil.
Lancaster Machine & Knife Works, Lancaster, N. Y., bit braces and butchers' cleavers.
MacDougal White Lead Company and Buffalo Oil, Paint & Varnish Company, Buffalo, MacDougal white lead and Buffalo oils, paints and varnishes.
Muzzey Bros., Paterson, N. J., aquarine cold boiler paint.
William J. Matheson & Co., Limited, New York City, white lead and flake white.
David Maydole Hammer Company, Norwich, N. Y., handled hammers.
Norton Grinding Company, Worcester, Mass., samples of grinding.
National Time Recording Company, Binghamton, N. Y., time recorders and stamps.
Northfield Knife Company, Northfield, Conn., pocket cutlery.
Ohio Tool Company, Columbus, Ohio, mechanics' tools.
Pratt & Letchworth Company, Buffalo, malleable iron and steel castings.
Pike Mfg. Company, Pike Station, N. H., sharpening and grinding stones.
Pittsburgh Reduction Company, Pittsburgh, Pa., aluminum cooking utensils.
Arthur E. Rendle, New York City, Paradign and Duk Bac skylight.
John A. Roebling's Sons Company, Trenton, N. J., wire cloth and screens.
J. Godfrey Wilson, New York City, Rollins steel shutters.
Wilke Mfg. Company, Anderson, Ind., refrigerators.
Wagner Mfg. Company, Sydney, Ohio, aluminum and iron hollow ware.

Bronze Medals.

American Steel & Wire Company, Chicago and New York City, Juniata horse and mule shoes.
American Steel & Wire Company, Chicago and New York City, bale ties.
American Steel & Wire Company, Chicago and New York City, chemicals and colors.
Bridgeport Gun Implement Company, New York City, golf clubs and accessories.
Buck Bros., Millbury, Mass., edge tools and razors.
A. H. Bliss & Co., North Attleboro, Mass., machine watch chains.
George M. Clark & Co., Chicago, gas water heaters.
Cleveland Wire Spring Company, Cleveland, Ohio, steel hods and boxes and wire springs.
Cosmopolitan Range Company, New York City, electric broiler and oven, and French range.
Erie Specialty Company, Erie, Pa., cork pullers.
Iron Clad Mfg. Company, New York City, steel soda fountains.
L. O. Koven & Bro., New York City, galvanized iron range boiler.
George W. Korn Razor Mfg. Company, Little Valley, N. Y., razors.
Lorillard Refrigerator Company, New York City, refrigerators.
Edward Miller & Co., Meriden, Conn., oil lamps.
Mann Bros., Chicago, wooden ware and washing machines.
Morley Bros., Saginaw, Mich., counter ladder and chain hooks.
1900 Washer Company, Binghamton, N. Y., 1900 washer and washing mach'nes.
Norton Emery Wheel Company, Worcester, Mass., India oil stones.
Oliver Bros., Lockport, N. Y., brass bedsteads.
Oneida Community, Limited, Kenwood, N. Y., game traps.
Purity Stopper Company, New York City, aluminum stoppers.
Roberts Mfg. Company, Philadelphia, germ proof filters.
A. L. Swett, Medina, N. Y., hot water heater.

Honorable Mention.

American Lamp & Brass Company, Trenton, N. J., lamps.
A. Buch's Sons, Elizabethtown, Pa., lawn swings.
Jenkins Brothers, New York City, electromagnetic lamp holder.
Oneida Community, Limited, Kenwood, N. Y., silver plated table ware, flat ware.
Oneida Community, Limited, Kenwood, N. Y., products—exhibits as a whole.
United Indurated Fibre Company, Lockport, N. Y., ice cream freezer.

The Delaware Forge & Steel Company.—At the annual meeting of the stockholders and directors of the Delaware Forge & Steel Company, held at their office, Wilmington, Del., October 11, 1901, the following officers were elected: John Fritz of Bethlehem, Pa., president; Seward Babbitt of Pittsburgh, Pa., vice-president; H. T. Wallace of Wilmington, Del., secretary and treasurer. The Board of Directors consists of John C. Osgood of New York City; J. Ernest Smith, Wilmington, Del.; H. T. Wallace, Wilmington, Del.; John Fritz, Bethlehem, Pa.; Samuel Adams, Jr., Bethlehem, Pa.; J. B. Lawton, Wilmington, Del.; H. E. Smythe, Pittsburgh, Pa.; William Gorman, Philadelphia, Pa., and Seward Babbitt, Pittsburgh, Pa.

The Indiana Weekly Wage Law Constitutional.—The Indiana courts have decided after quite a long litigation, which has been hotly contested, that the Indiana weekly wage law is constitutional. This law makes it imperative for all employers of labor in the State of Indiana to pay their employees weekly. It is a regulation which will entail much expense on large manufacturing establishments employing a great force of workmen, but it appears that no exceptions could be recognized and that the law would have to be made applicable to all employers.

The value of the four principal articles of domestic exports for September was $62,177,735, being a decrease of $3,158,944, compared with the same month last year. Breadstuffs fell off $933,326, cotton $3,699,809, while provisions increased $1,198,237 and mineral oils $275,954. For the nine months ended September 30 the value of those articles exported was $602,035,745, exceeding by $51,377,561 those for the corresponding period of last year.

Edgar A. Bienenstok & Co., 717 North Second street, St. Louis, Mo., the well-known dealers in machinery, report the closing of important contracts this week for the complete equipment of two machine shops.

The Iron Age

New York, Thursday, October 17, 1901.

DAVID WILLIAMS COMPANY, - - - - - - PUBLISHERS.
CHARLES KIRCHHOFF, - - - - - - - EDITOR.
GEO. W. COPE, - - - - - - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - - - - - HARDWARE EDITOR.
JOHN S. KING, - - - - - - - - BUSINESS MANAGER.

A Feature of the Bar Trade.

Changes which are brought about in a trade through the use of materials of a different quality sometimes have an important influence in the sudden establishment of permanent conditions. An instance of this character will be found in the agricultural implement trade. The manufacturers of agricultural implements at one time used very little steel in turning out their machines. A few years since the price of soft steel was so cheapened that some implement manufacturers were induced to place contracts for that metal to take the place of the rolled iron sections which they had previously been using. The past year much more of this trade was secured by the soft steel makers. Soft steel having a tensile strength of 60,000 pounds to the square inch, as compared with 45,000 to 50,000 pounds for ordinary bar iron, the greater toughness of the steel enabled the implement manufacturers to reduce the thickness of the parts thus made and enabled them to build lighter machines than when iron was used. This necessitated a change in the machinery and methods throughout the shops. Dies were made to conform to the smaller shapes, and other changes were made in machinery in important particulars to meet the new conditions. It would now prove inconvenient and involve quite an item of expense to return to the use of iron. Even if the latter should be furnished considerably cheaper than soft steel, the inducement would have to be strong to bring about the change.

This, however, does not sound the knell of bar iron. The rather hasty conclusion was formed a number of years since that bar iron was destined to be driven out of use, as the cost of producing steel cheapened and the production increased to a point which would enable all consumers to secure an adequate supply of it. Nevertheless, although we have passed through quite long periods during which steel has been sold cheaper than iron, the use of iron has continued, rolling mills which have been abandoned have been started, and these mills are turning out as large an iron product as at any time in their history. The growth of the consumption of iron and steel is evidently sufficiently heavy to enable the manufacturers of iron to retain in their control a considerable percentage of the trade. The demand for steel, however, is increasing more rapidly than for iron, and in the direction of the former is the growth of the future destined to proceed.

Basic Steel in the East.

The concentration of the holdings of productive ore property in the Lake Superior ranges has led to the conviction that there will be no return to the periodical decline of ore prices to a figure which represented little more than freight charges for off Bessemer grades. In other words, it is believed that what little ore of this character reaches the open market will henceforth command a price commensurate with its intrinsic value. Nor is it likely that we shall again see, in the Central West, prices of steel billets drop to former low records. Ore must earn its proportion of fixed charges, and steel billets will not be delivered to outside mills unless there is a good profit in them. The tendency is toward the finishing of the raw material on the part of the large interests. The result will be that the independent rolling mills are aiming to get into the position of producing their own steel at least, and wherever possible are reaching back to the ore. A further result is that ore property in other parts of the country has become available again for profitable use.

For some time past we have been witnessing the anomalous fact that pig iron largely produced from local ores in the East has been shipped to the Central West, from which district very large quantities of billets and of finished iron and steel are delivered to tidewater markets.

The bulk of the Eastern pig iron which has been sold to the Central West is basic pig, suitable for open hearth steel manufacture, and the last few years have abundantly proved that iron of this grade can be readily made to meet the required specifications. Under the circumstances the plan has been suggested, and appears entirely feasible, that a self contained industry be built up in the Eastern or tidewater section based upon the large deposits of ores known to exist in Eastern Pennsylvania, New Jersey and in New York, and for some time only mined in relatively moderate quantities.

Aside from the certainty that lake ores will command higher prices, other developments, encouraging in their nature, have taken place. Progressive iron makers are now applying more modern methods to the mining of ore, magnetic separation is being introduced, and very encouraging work has been done in the roasting of magnetites previous to charging them into the furnace. With modern stacks, such as have been erected lately, and with older furnaces thoroughly modernized, costs have been very materially reduced. Costs are claimed by experienced iron makers which seem certain to safeguard the producers against loss even in time of depression. The foundation is thus assured for a prosperous steel industry which can supply cheap basic open hearth steel to rolling mills, the latter possessing the additional advantage that labor is considerably lower than in the Central West.

One question seems worthy of consideration in connection with this subject, and that is whether it is wiser to weld together the scattered interests as they now exist or whether a free further development along the lines of different ownership of mines, furnaces and steel plants is likely to be most effective.

The election this week of a number of representatives of the Pennsylvania Railroad Company into the board of the Cambria and Pennsylvania Steel companies is the culmination of a very interesting movement. It means that one of the most powerful of our railroad systems, famous for the care which it has always bestowed upon the industries along its lines, means to protect its own in the possible case that differences might arise with other great interests. The Pennsylvania Railroad for many years had a large interest in the steel works which bear the same name, so that the step taken is not without precedent. Nor does it stand entirely alone, since capitalists connected with other great railroad systems are reported to be financially interested in other plants.

CORRESPONDENCE.

Selling Pig Iron by Fracture.

To the Editor: I have read with pleasure and profit much that has been written the past few years on the subject of the proper grading of pig iron, and now your editorial of October 3, "Selling Pig Iron by Fracture," stimulates me to relate my experience in that line.

I have been a purchaser or producer of pig iron for a considerable portion of the past 37 years. This period takes one to the time when iron was sold altogether by fracture, and when a chemist at a blast furnace would be considered as strange an adjunct as a picture gallery. As you state, iron was bought by fracture, based in a measure on the character of the ore mined at any particular works. I remember a certain Lehigh Valley furnace company, now out of existence, who made a specialty of an iron admirably adapted for making small and thin castings, but which was a poor iron for the puddling furnace, and was too weak for large castings. The ores from which this iron was made were largely local brown hematites, now considered too lean and siliceous to be available. The fracture of the pig showed a close grain and light color, sometimes approaching what was then called carbonized, but which we now know to be a high silicon iron. The works where I am now employed (then owned by the Trenton Iron Company) used New Jersey magnetites, and made an iron admirably suited to rolling mill use, but making a very hard casting even when the fracture showed No. 1 or 2 X. The cause very probably was the low per cent. of silicon, due to the character of the plant and the manner of working such material. During our last blast, for certain rolling mill trade, we made from the same materials considerable quantities of 2 X iron below 1 per cent. of silicon, and from same materials, at other times, 2 X iron with over 3 per cent. of silicon.

In 1895, when commencing the last blast of our present furnace, after carefully considering the situation, I adopted a plan of classifying our product which, while not strictly scientific, proved practical and answered our wants very well. It was a combination of the two systems of grading by analysis and fracture. Puddling had so diminished that we were compelled to seek an additional outlet for our product. The manufacture of basic open hearth iron would have been our best recourse, had not our equipment been ill adapted for that branch. We were compelled, therefore, to make foundry iron as a considerable portion of our product, and to place it in the market against a rooted belief that our ore (a dense Jersey magnetite, of which we used 85 per cent. in our mixture) would not make a foundry iron. I recognized the fact that a majority of our rolling mill customers, and a minority of our prospective foundry customers, would give us chemical specifications to a greater or lesser extent, and that the balance would buy by fracture gradings; hence my determination to adopt a mixed system.

The considerations on which it was based were:

1. That the fracture was an approximate indication of the ratio of the graphitic to the combined carbon—sufficiently close for practical purposes.

2. That our raw materials being uniform, the per cent. of phosphorus would be an absolute constant.

3. That when the amount of manganese in the ore is not large, and is uniform, the per cent. in the pig iron will be within somewhat narrow limits. Our iron contained a very small per cent. and it was very uniform.

4. Sulphur varied in close relation to the grade (as is usual), the amount in Nos. 1 and 2 X being a trace or but little more. Our ore and flux contained none and our fuels were selected largely on the basis of a low per cent. of this element.

5. The only ordinary element of pig iron now remaining is silicon, and it is the one which varies greatly in percentage, and which in ordinary practice is the most important to determine. Upon this element our division of iron into classes was based, all under a certain per cent. being put as class A, from this limit to a certain higher per cent. as class B, &c.

Our method was this: From every cast three samples were taken for analysis. Every cast had a number and was analyzed for silicon at least. Records giving the number of each cast and the results of whatever analyses may have been made (silicon always) were kept in the laboratory and also in the office. Sulphur determinations varied from one in 12 casts to one every cast, depending upon the working of the furnace and any special requirements, such as a requisition for iron with sulphur very low for the grade, or where the exact sulphur analysis was required with each shipment. Phosphorus and manganese were generally determined twice a month, chiefly to keep the analyst in practice.

Our iron was weighed and piled according to grade (fracture) and class (silicon analysis) in 10-ton lots. One man did the grading, each grade being between certain roughly defined limits. We made no effort to get a microscopical uniformity in the fractural appearance of every pig in the same lot, as being useless, and deeming it more important to have every lot from one cast only as often as possible. Any fraction less than 10 tons remaining over in a cast was held until a sufficient amount of the same grade and reasonably close in silicon could be obtained from the remnant of another cast to make a 10-ton lot. Thus, we will suppose a cast of 37 tons No. 2 plain, silicon 2.15 per cent., which will give us a remnant of 7 tons. Say in a few days we have a remnant of 5 tons of the same grade, with silicon 2.01 per cent., from which we take 3 tons, adding it to the 7, making a complete lot of No. 2 plain, silicon 2.11 per cent. Our records designate these mixed lots, showing the casts from which they were obtained.

Our shipping book gives the cast numbers for every carload of iron shipped, so that any shipment can be duplicated at a future time.

In building up a foundry iron trade, where in a majority of cases the only guide to the kind of iron wanted is a statement of the articles made, and where the value of this information is often rendered nugatory by the lack of knowledge on the part of the foundryman as to the composition of the other irons he uses, the first shipment is certain to be of the hit or miss order. We frequently hit the mark the first shot, and then our system enabled us to supply a satisfactory article thereafter. Sometimes we failed on the first attempt and were refused a second trial, but generally got it, and generally succeeded. One party requested us to make a third trial, when we succeeded fully, and we had the pleasure of making many shipments thereafter, all of which gave complete satisfaction.

The progressive furnaceman does, of course, prefer full specifications of his customers' wants to vague and inexact descriptions. The one system has a scientific basis and an almost mathematical exactness; the other is in the clouds. But conditions do not always permit of the use of the scientific method, and in our instance, with a considerable clientele, who would not know the bearing of an analysis if furnished, the method described proved practical and satisfactory.

SEELY B. PATTERSON.

ANDOVER IRON WORKS, PHILLIPSBURG, N. J., October 9, 1901.

An elaborate series of tests has been carried out to determine the properties of magnalium, an alloy of magnesium and aluminum, discovered by Dr. Mach of Berlin. These tests were made by Herr Diegel, an engineer of the Torpedo Division at Friedrichsort, Germany. One important conclusion is that the resistance to the corroding effect of sea water is so low that its use for marine purposes is not regarded as safe.

The National Dock & Fuel Company have been formed by Pittsburgh capitalists, with a capital of $300,000, to provide docking facilities for the Midland Coal Company and other independent producers in the Pittsburgh district. A site for the docks has been secured at Cleveland. The company have organized by electing George E. Tener, president; S. M. Taylor, vice-president; M. K. Salsbury, treasurer, and John A. Donaldson, secretary and general manager.

The Modern Drop Hammer.

At a meeting of the Workingmen's Association of Hartford, Conn., C. E. Billings, president of the Billings & Spencer Company of that city, delivered an address from which we quote the following interesting passages:

"From 1847 to 1862, among the green hills of the State of Vermont, was located one of the best equipped plants for the manufacture of machine tools there was in this country. It was there, in the years of 1854 and 1855, that most of the machinery was built for the manufacture of the then celebrated Enfield rifle for the English Government on the interchangeable system. Previous to that time they had made their firearms on the "cut and try" plan, or what we would term in this country hand work. The parts were made in different shops; for instance, one manufacturer was skilled in making the barrel, another the stock, another parts of the lock, and so on through the list. The various parts were assembled at the Tower of London, and it was there that the "cut and try" plan commenced, filing a little here, clipping off a little there, with several trials before the parts would go together satisfactorily.

"On the introduction of American machinery and tools all this was changed, for it was possible to machine pieces of the arms so that parts of the same kind would be exact duplicates of each other, consequently the cost of production was reduced and the quantities in a given time increased over the old method. To America is due the credit of introducing the interchangeable system in the manufacture of firearms, sewing machines, watches, &c.

"It was necessary to have uniform forgings so that they could be handled in special fixtures adapted to the different parts. The art of forging in dies at that date was the weak point. Drop hammers had not then come into use and all the forgings were made by the old hand swaging process. In the faces of the two dies were cut the forms of the parts to be forged. The power used was hammer and sledge by the smith and helper.

"So far as I have been able to learn, drop hammers were first used by Col. Samuel Colt about the year 1853 in the manufacture of the celebrated revolving firearm that bears his name. The hammer of the Colt drop was raised by a vertical revolving screw. In the first year of the war Golding and Cheney obtained United States patent on a drop hammer, the principal feature of which was raising the hammer by a leather belt between the friction rolls. Those friction rolls are in use to-day on what are considered the best hammers for drop forging. In other respects there have been great improvements. Some of the latest of these improvements I will endeavor to explain."

Mr. Billings then gave technical descriptions of the counterbalanced treadle, the compound lever device, and the joint swing head construction. Of paper pulleys he said:

"Experience has shown that iron pulleys are not reliable for drop hammers. They become crystallized and break and some one is likely to get hurt. Wood pulleys with iron hubs are very good, but the compressed paper pulleys give the best satisfaction. They are light, as compared with their strength, are elastic and give an excellent belt surface."

After speaking of the method of fastening boards in hammers he continued as follows regarding foundations and the ratio of the base as compared with the weight of the hammer:

"There seems to be a variance of opinions in regard to the proper foundation for a drop hammer. Several articles have appeared in the technical journals in regard to same. Some favor a rigid, rock like foundation, and others favor an elastic construction. It seems to me that the weight of the base of the machine as compared to the weight of the blow given by the hammer should have more or less consideration in determining the construction of the foundation. It is apparent that if a man tried to do some hand forging with an ordinary flat iron held bottom up between his knees for an anvil, the results would not be altogether satisfactory, but if it were possible for him to hold a piece of iron weighing, say, 400 pounds on his knees, he would do more execution with his hammer and in addition could stand some pretty good blows from his helper's sledge. From this illustration I argue that if the base of a drop hammer should be made heavy enough, no foundation whatever would be required. The inertia of the mass of metal would be sufficient to absorb the effects of the shock imparted by the blow of the hammer. The cost and difficulties of handling, however, make such construction out of the question. Within the past few years an increase in the weight of the bases of drop hammers has been a move in the right direction. In deciding this point a certain ratio between the weight of the hammer proper and the base is considered. In former years the ratio of 6 or 8 to 1 was considered sufficient. This was increased by some machine builders to 10 to 1, and now the most modern practice advocates a ratio of 15 to 1. To return to the subject of foundations. I would not venture to say which construction will give the best results, owing in a measure to the variation of conditions, particularly the character of the ground where the machine is to be located. In fairly hard ground, such as clay, or where 'hard pan' can be reached within 15 feet of the surface the following construction will give satisfaction:

"At the bottom of the excavation put in 2 or 3 feet of broken stone and Portland cement; on top of that place chestnut timbers on end, these timbers to be sawed on four sides and bolted together, the section of this block to be of sufficient size to accommodate the base of the machine and to have about 4 inches margin. It is preferable to have the upper end of the timbers several inches below the surface of the ground, as they will then be less liable to decay. With a base of right proportion and a properly constructed foundation, the old method of fastening down the base with anchor bolts is unnecessary. Angle irons at the corners of the base fastened down to the foundation with large screws will answer the purpose. The foundation as described above has been in use for more than 25 years.

"About four years ago one of the drop forging concerns in this city adopted the solid concrete foundation, doing away entirely with timbers. The cost of labor and material does not much exceed the cost of wood foundations. Experience thus far demonstrates that concrete foundations will stand service indefinitely, thus saving expense of relaying and loss of service of hammer, as in case of wood foundations. The solidity of concrete foundations affords greater resistance to the shock from the blow of the hammer.

"The art of stamping hot metal in dies of various form has made wonderful strides in the last 40 years. Many articles complicated in outline are now produced by drop forging that could not be produced by the ordinary method of hand forging."

The Pittsburgh Foundrymen's Association.—The regular monthly meeting of the Pittsburgh Foundrymen's Association was held in that city on Monday evening, October 7, the date having been changed from Wednesday evening by consent. There was a fair attendance and S. H. Stupakoff read a paper entitled "The Molding Machines." It was of much interest and is the first of a series of papers to be read on the same subject. This was the annual meeting of the Pittsburgh Foundrymen's Association and new officers were elected, as follows: John McClaren, president, of Phillips & McClaren; T. P. Thomas, vice-president, of Sterrit-Thomas Foundry Company; Philip Mathes, treasurer, of Brittain & Mathes Company; F. H. Zimmers, secretary, of Union Foundry & Machine Company. An Executive Committee was also elected, consisting of William Yagle of William Yagle & Co., Limited; S. D. Sleeth of Westinghouse Air Brake Company, Robert Taylor of Taylor, Wilson & Co., Davis Evans of Pennsylvania Casting & Machine Company and S. H. Stupakoff. It was decided to hold the regular monthly meeting on the first Monday of each month.

Reports are coming to American manufacturers that Mexico seems to be on the eve of financial troubles. Money is tight in the capital and business men are becoming very cautious.

The Crucible Steel Company of America.

The Crucible Steel Company of America have just issued the following financial statement for the fiscal year ending August 31:

CONDENSED GENERAL BALANCE SHEET.

Assets.

Real estate, plant and equipment	$43,362,013.17	
Betterments	283,001.68	
		$43,645,014.85
Investment securities		1,334,211.01
Accounts and bills receivable	$3,014,048.29	
Advances on account of ore and metal contracts	25,961.62	
		3,040,009.91
Cash		695,680.49
Inventory—raw material, product, &c		5,712,002.91
		$54,426,919.17

Liabilities.

Capital stock—Preferred	$25,000,000.00	
Capital stock—Common	25,000,000.00	
		$50,000,000.00
Mortgage and bond obligations (not due)		183,100.00
Accounts payable		1,389,883.00
Park Steel Company account		512,324.38
Preferred dividend No. 4 (payable September 30, 1901)		437,500.00
Profit and loss, balance	$173,153.57	
Profit and loss, balance August 31, 1901	1,730,958.22	
		1,904,111.79
		$54,426,919.17

Profit and Loss Account.

Net earnings from operations	$3,490,438.09	
Dividends	30,861.25	
		$3,521,299.34
Less—		
Dividends 1, 2, 3, paid	$1,312,500.00	
Dividend 4, payable September 30, 1901	437,500.00	
	1,750,000.00	
Paid to outside holdings, Park Steel Company, preferred stock	40,341.12	
		1,790,341.12
Balance, August 31, 1901		$1,730,958.22

C. H. Halcomb, the president, makes the following statement:

The results of the past year show net earning of $3,490,438.09, which I consider very satisfactory. It is true that the profits of the various companies the year before the merger into the Crucible Steel Company of America aggregated about $4,000,000, but these profits were made during an abnormal year, in which the volume of business was larger and the prices higher than they had ever been or have been since, and the inventories of these companies at the time of merger were taken at the then ruling prices, which declined very materially within less than one month after the date of merger. In addition to this your company were very heavily handicapped by having to assume contracts for large amounts of raw material at high prices, for which the various companies had obligated themselves, and which your company had to assume and carry out. Your company started in last year with very few orders on hand and comparatively no contracts, because the different constituent companies had made no effort to book orders or make contracts, in view of the fact that a consolidation was probable. We have started in this year with a very large tonnage of orders booked and contracts sufficient to run us for at least two-thirds of the year, therefore I feel that I may safely say to you that the outlook of the company is most favorable. We have, during the past year, effected many economies in the operating and selling departments, which will show a considerable saving in the expenses this year.

Your company have, within the past year, purchased 175 acres of the finest manufacturing land on the Monongahela River, and have organized the St. Clair Furnace Company and the St. Clair Steel Company, of whom they own all the stock, and have commenced the erection of three large blast furnaces, 12 50-ton open hearth furnaces, and blooming mill, all of which will be in operation within the next few months, and will constitute the most modern furnace and steel works in the world. This plant will make us absolutely independent as regards raw material of all kinds, besides reducing our cost of manufacture to a minimum.

I have recommended to your Board of Directors that $490,438.09 should be deducted from the net earnings for depreciation, which suggestion they have adopted, and have carried to surplus account $1,250,000, which is the balance after allowing for the 7 per cent. dividend already paid and declared on the preferred stock, amounting to $1,750,000 (making the total surplus account $1,413,673.70), believing that while the company had earned about 7 per cent. on the common stock in addition to 7 per cent. on the preferred, it was not expedient to declare any dividend on the common stock this year.

A New Axle and Car Wheel Plant.—PITTSBURGH, PA., October 16, 1901.—(*By Telegraph.*)—The Pressed Steel Car Company of Pittsburgh have bought a site of 40 acres of land at Aliquippa, on the Pittsburgh & Lake Erie Railroad, about 20 miles from Pittsburgh. The company will buid on this site a large works for the manufacture of axles and car wheels. The works of this concern at McKee's Rocks and also at Woods' Run, in Allegheny, are so crowded for room that the necessary ground could not be had for the building of new works, and for this reason the company bought an entire new site for the plant.

The Old Dominion Iron & Nail Works.—At a meeting of the stockholders of the Old Dominion Iron & Nail Works of Richmond, Va., Gifford V. Lewis was elected president. Mr. Lewis was formerly general superintendent of the Chester Steel Casting Company of Pennsylvania. Arthur B. Clarke was elected secretary and treasurer, and Robert M. Blankenship superintendent. The new Board of Directors consists of J. William Middendorf of Baltimore, F. C. Todd of Baltimore, E. L. Bemiss, R. Lancaster Williams, R. M. Blankenship, Arthur B. Clarke and L. M. Williams. Arrangements have been made for the immediate enlargement and improvement of the works.

The Mixer Suit.—WASHINGTON, D. C., October 15, 1901.—The issues in the now famous suit of the Carnegie Steel Company against the Cambria Iron Company for alleged infringement of the patent covering the so-called Jones mixer, a device used in the continuous process of making steel direct from the blast furnace, will probably be heard before the end of the present week in the United States Supreme Court, which assembled yesterday for the regular October term. Notice has been sent to counsel for both sides to be prepared to proceed with the argument at once, and as the case is No. 17 on the court's docket it is expected it will be finally disposed of and the long standing controversy settled at an early date.

The Amalgamated Association at New Castle.—PITTSBURGH, PA., October 16, 1901.—(*By Telegraph.*)—The members of Unity Lodge, of the National Steel Company at New Castle, Pa., have surrendered their charter to the Amalgamated Association on account of the manner in which the late strike was conducted. The men returned to work at this plant as individuals and organized labor is not recognized by the management.

At Pittsburgh in the case of J. J. Spearman and Hugh Kennedy against the Bellefonte Iron Company, Bellefonte, Pa., a decre was entered, finding that the complainants are sole owners of letters patent for a valve for hot plast stoves, and that the defendant company have infringed the patent.

E. M. Scofield, manager of the Youngstown works of the American Bridge Company at Youngstown, Ohio, has removed to Groton, N. Y., where he has taken up his residence and connected himself with a new bridge concern to be located at that place.

The Youngstown Iron, Sheet & Tube Company, Youngstown, Ohio, have issued notice to the trade that they will have their sheet mills in operation in January, and are entering orders for iron sheets for delivery in January, February, March and April. Their tube mill will not be in operation until after the sheet mill is started.

Notes from Mexico.

Imports and Exports.

DURANGO, MEXICO, October 9, 1901.—The foreign trade of the republic for the last fiscal year, as revealed by the figures lately published, was of a character which to one not familiar with the actual existing conditions might be considered emphatically discouraging. These figures show that, as compared with the fiscal year 1899-1900, there has been a falling off in the country's exports of $1,400,021.29, the total value of exports for the year named being $150,056,360, against $148,656,338.71 for the fiscal year ending June 30 last. The totals are Mexican silver values. The exports of mineral products (chiefly gold and silver) show an increase of $12,935,926.41, while vegetable products and manufactured products fell off in value, respectively, $14,790,363.77, and $418,643.91. On the face of it, this is a very bad showing, since it indicates that while the country's agricultural and manufacturing products are not being purchased by other countries to any great extent, the precious metals are leaving the republic in greatly increased volume, thus intensifying the financial stringency from which the country has been suffering. So far as observation goes, however, the figures have very little relation to the ruling conditions. Business activity and commercial prosperity are everywhere evident, and the poorest among the people lack neither employment nor food. The optimism which finds consolation in the fact that the common people have lived better even if there has been a great falling off in the exports of vegetable products, is a factor which contributes to national contentment and one which is strongly in evidence.

Imports for the past year show an increase in value of $3,765,275.69 (gold). It is a subject of remark among those who would foster trade relations between Mexico and Great Britain that imports from the latter country show a very marked decrease during the first eight months of the present year. Only 4231 tons of railway iron and steel were imported from the United Kingdom, while in the same period last year the figures were 12,610 tons, and of galvanized sheets 3155, as compared with 3936 tons.

Fineness of Silver for Coinage.

With the object of relieving the monetary stringency, so far as it could be done by executive action, President Diaz, through the Minister of Finance, directed last year that the mints receive for coinage silver bars containing 850 thousandths in fineness instead of 900 thousandths, the minimum fixed by law. A decree has been issued by the Finance Department extending the operation of the order until December 31 next. J. J. D.

The Spiral Riveted Tube Company.

There have been incorporated under the laws of New Jersey, the Spiral Riveted Tube Company, with a capital of $175,000. The principal object of the company is defined as follows: "Manufacturing and dealing in spiral riveted pipe machines, spiral riveted pipe, light and heavy sheet iron work, brass and iron castings, including the business of galvanizing in all its branches." The company are the owners of several very recently granted patents on improved machinery for manufacturing spiral riveted pipe, which will enable them to manufacture better and stronger pipe and produce it much more rapidly and with far greater economy of labor than has hitherto been done.

The factory, which will cover a little over an acre of land, will be located in Jersey City near the corner of West Side and Fisk avenues, on the Newark branch of the Central Railroad of New Jersey with a railroad siding running directly through the works. The building for the galvanizing department is now nearly completed, and contains the largest and most modern improved galvanizing plant in this section of the country. This department will be ready for operation November 1, and it is reported that the company have enough contracts already booked for outside work to keep it well employed for many months. Pipe machines capable of turning out pipe of all sizes from 3 to 30 inches in diameter are now building at the works of George M. Ball & Son of Brooklyn, and will be completed by the time the main building of the plant is finished and ready to receive them.

The officers of the new company are: President and treasurer, John A. Wilbur (also president of the Salem Nail Company); secretary, A. Howard Abendroth (formerly of the Abendroth & Root Mfg. Company); general superintendent, Frederick W. Stapf (formerly with the Abendroth & Root Mfg. Company).

The Republic Iron & Steel Company.

Steel Plant Not Decided Upon.

The Republic Iron & Steel Company have not yet definitely decided to build a large steel plant in Alabama, notwithstanding reports which have been published to that effect. They have under consideration the establishment of a steel plant as a feature of their development of the Pioneer property which they own in that State. They now have three fine blast furnaces at Pioneer, and it is highly probable that in the course of time they may decide to take steps to convert the pig iron into steel and market the product in a more advanced form than pig iron. Although this matter has received some consideration, it would be premature to say that such a plant will be erected.

The company are considering the advisability of putting in operation their works at Springfield, Ill. These works, although idle for a long period, have by no means been abandoned. The other plants owned by the company which are not now in operation are at Cleveland, Ohio, and at Marion, Frankton and New Albany, Ind. These plants will be dismantled for the purpose of transferring the machinery to other points to be used in enlarging the facilities of works so situated as to warrant such action. The Mitchell-Tranter Works, Covington, Ky., will not be abandoned, the company having reconsidered their intention to do so. These works are in active operation, turning out a large product. Taking the entire business of the company, it may be stated that they never had so much booked as at the present time, and the outlook is most promising for the future.

The Coal Fields of Northeastern China.—Among the recent papers issued by the American Institute of Mining Engineers is an admirable memoir by Noah Fields Drake on the coal fields of China, of which so little, comparatively, is known. Mr. Drake summarizes his report as follows: "The stratigraphic position of the lower and big coal beds in all the coal fields described in detail, from the Kai-ping basin in Eastern Chili to the Tsê Chou field in Southeastern Shansi, is practically the same, lying as they do on an average from 150 to 300 feet above the carboniferous limestone. In each of these fields we see only a part of a greater field, so that we are led to believe them to have been originally one continuous bed, or series of closely related beds, of vegetable deposits which have been buried beneath a great thickness of sediments, and subsequently broken and separated by earth crust movements and denudations, so that they are now more or less independent fields. The apparent average thickness of the principal coal bed of each of these fields is—for Kai-ping, 18 feet; for Wang-p'ing, 35 feet; for Fang-shan, 20 feet; for P'ing-ting, 20 feet, and for Tsê Chou, 22 feet. Supposing these fields to represent equal areas, we have a general average of 23 feet for the whole region. This belt has a linear extent of about 500 miles. If we take a width of only 50 miles and suppose that, because of denuded areas, only one-half is coal bearing, we still have 12,500 square miles of coal. This would give us about 350,000,000,000 tons, which would be enough to supply the world, at its present rate of consumption, for many centuries. It may be doubted whether the coal fields above noted represent average conditions along the whole of this extensive belt; but the figures I have given may be accepted with confidence, so far as they go. The coal fields here discussed are the only ones about which I have reliable data. In giving estimates, where there is doubt, I have endeav-

ored to underestimate the probable quantities. If we consider all the workable beds, instead of the one big bed, our estimated totals would have to be very much increased. In the Kai-ping coal field, the big bed contains only about one-third of the workable coal; in the Wang-p'ing basin it contains a much smaller proportion; but in the other fields it covers most of the workable coal. A further study of the coal fields is likely to show them to be more extensive than we have supposed hitherto."

Machinery at the Pan-American Exposition.—X.

Gas Engines.

The special feature of the exhibits of gas engines at the Buffalo Exposition is the display made of engines of much greater capacity than shown at any previous American exposition. Hitherto the gas engines exhibited have been usually under 25 horse-power, adapted for such service as operating light machinery, running small dynamos and performing work of a character calling for the intermittent operation of a power plant. The field of these engines, however, has been greatly increased by the development of units of much greater capacity within the last few years. It is not uncommon now to find manufacturers of gas engines prepared to furnish engines from their standard patterns of 50 to 150 horse-power. Quite a number of manufacturers are running up to 300 horse-power, and in the case of the Westinghouse Machine Company gas engines are being regularly built of 750 horse-power. The Buffalo Exposition is the first occasion at which any considerable number of large gas engines of different makes have been assembled, so that their features of construction and operation can be compared. The largest engine shown is 300 horse-power, but there are quite a number which range from this size down to 50 horse-power. The engines displayed are exhibited by the following manufacturers:

Westinghouse Machine Company, East Pittsburgh, Pa.
Struthers, Wells & Co., Warren, Pa.
National Meter Company, New York City.
Marinette Iron Works Mfg. Company, Marinette, Wis.
The Alberger Company, Buffalo, N. Y.
Bessemer Gas Engine Company, Grove City, Pa.
Lazier Gas Engine Company, Dubois, Pa.
Otto Gas Engine Works, Philadelphia, Pa.
August Mietz, New York City.
Weber Gas & Gasoline Engine Company, Kansas City, Mo.
Foos Gas Engine Company, Springfield, Ohio.
Pennsylvania Iron Works Company, Philadelphia, Pa.

Of these engines five are shown at work side by side in the center court of the Machinery Building, where they form part of the exposition's power plant—namely, engines built by Struthers, Wells & Co.; National Meter Company; Marinette Iron Works Mfg. Company; the Alberger Company and Bessemer Gas Engine Company. Each of these engines is belted to a Root rotary pump. There are 12 of these pumps, which force water for the fountain displays, seven of them being operated by steam engines and five by the gas engines mentioned. The other gas engines exhibited are scattered over the exposition.

Westinghouse.

The Westinghouse Machine Company exhibit their gas engines in the Electricity Building, forming part of a joint exhibit of the various Westinghouse interests. They have installed two gas engines, both of which are used for the purpose of generating electricity for the Westinghouse electrical display. The larger engine shown is a 300 horse-power three-cylinder vertical engine of the four-cycle type. This engine is directly coupled to a 2200-volt two-phase alternator with a revolving field. This engine furnishes current to a large number of lamps and to several Westinghouse motors used for stationary service. The smaller engine shown generates 40 horse-power and is also a three-cylinder vertical engine of the four-cycle type. It is used for exciting the large alternating generator and thus securing direct current, as well as for furnishing power for additional electric service needed in connection with the exhibit.

Struthers, Wells & Co., Warren, Pa., exhibit a 300 horse-power engine, which is also of the vertical type, in the center court of the Machinery Building. This engine was fully described in *The Iron Age* of September 19.

Nash.

The National Meter Company of New York City have two Nash engines on exhibition, one of 125 and the other of 30 horse-power. The larger is located in the center court operating a pump, while the smaller is located on the main floor of Machinery Building and runs a dynamo used for electric lighting. Both these engines are of the company's regular type, being vertical, four-cycle, hit or miss engines. The larger has three cylinders and the smaller two. The cranks are so set as to make equal intervals between explosions, thereby securing a regulation which has been found in practice to be remarkably uniform. The company claim that their governing arrangement has secured not only great efficiency in the working of their engine, but also the utmost economy in the consumption of gas. They take gas only as it is required and thus get the full force of the power generated. The crank shaft, boxes, &c., are inclosed in a tight case, but all parts are easily accessible through doors on the back of the engine. A special feature of these engines is the ability of the operators to vary the point of ignition at will, to make an early or late ignition, according to the character of the work. This can be done instantly while the engine is in operation. Another feature which has proved attractive to users of these engines is the ease with which they can be converted to use either gas or gasoline. This also can be done without stopping the engine. The company manufacture engines having a capacity of one-third horse-power to 250 horse-power, these engines having one, two or three cylinders, according to their size. They make a specialty of the manufacture of direct connected electric lighting sets and direct connected pumping engines. The company have taken a prominent position in these lines. It is stated that they installed the first direct connected electric lighting plant in this country about six years since, and this plant is still in successful operation. They are furnishing large numbers of their direct connected pumping plants for operating water works for small towns. These plants are furnishing water direct to the mains without a stand pipe and have proved very satisfactory in operation. The company use a centrifugal clutch coupling of their own design with their direct connected lighting plants, which corrects any tendency to variable speed, which would follow a like variation in the engine or load. This guarantees the perfect operation of a lighting plant run by this method, although great success is secured with Nash engines in operating belted electric generators. They guarantee a regulation within 2 per cent. on belted generators. The engines of the National Meter Company are built under the patents of Lewis H. Nash, who has not only distinguished himself by his practical inventions in the gas engine line, but is also a prolific inventor in other fields, notably in the production of water meters.

Walrath.

The Marinette Iron Works Mfg. Company, Marinette, Wis., exhibit one engine, which is of 125 horse-power, operating a pump in the center court. This engine is of the vertical four-cycle type with three cylinders. It has a number of special features. It is operated by a throttle governor, which misses no explosions, but takes a lighter charge, which is claimed to give better regulation with much less weight required in the fly wheel. Consequently the fly wheels used with this engine are considerably lighter than ordinarily found. The valve gear, including the igniter, is all actuated from a cam shaft inside of the crank piece. The valves are all in cages, which can be withdrawn for grinding at any time without taking off the entire head. The crank shaft is out of the center, which gives long time and a long leverage when a piston is doing work and short time and short leverage when not doing any work. The sparker used is the standard "make and break." This engine attracts much attention, being a new construction quite recently brought out, which met with immediate favor. It is known as the Walrath engine, from the name of the inventor. The

company are working into the manufacture of large engines on account of the heavy demand which they find for large sizes. They are now building a 200 horse-power engine.

The Alberger Company of Buffalo, N. Y., exhibit a 125 horse-power engine operating a pump in the center court. This engine was described in *The Iron Age* September 5.

Bessemer.

The Bessemer Gas Engine Company, Grove City, Pa., exhibit a 100 horse-power horizontal double cylinder two cycle engine, operating a pump in the center court. The company have hitherto made horizontal engines only, but are now beginning to build vertical engines. These engines use the "make and break" sparker, with a six-jar Edison battery. The valves are all in inclosed cases. Extra large bearings are used, the shaft being 7 inches and the crank pins being 7½ inches. A special feature of the installation of this engine is the use with it of the Carruthers-Fithian short shaft gas engine clutch. This clutch is manufactured by the Carruthers-Fithian Clutch Company of Grove City, Pa., and is made in all sizes, from 1 to 1000 horse-power. It occupies the same space on the shaft as a solid pulley and has proved of very great value in starting up the engine to which it is attached. Owing to its use the engine can take up its load very gradually.

Lazier.

The Lazier Gas Engine Company, Dubois, Pa., exhibit a 50 horse-power horizontal four cycle engine. This engine is of the hit or miss type. The valve construction is simple, the engine having only three valves, which can be taken out in a moment without disturbing the piping or other appliances. The governor operates the exhaust valve, holding it open when the speed of the engine is above the normal. All valves remain in a state of rest when operated under a partial load or no load, which allows the piston to travel in the cylinder freely without compressing idle charges of air. It is claimed that this combination greatly increases the durability of the engine. This engine is located on the main floor of the Machinery Building and furnishes driving power for 12 different exhibitors of machine tools and other machinery, furnishing all the power needed by them.

Otto.

The Otto Gas Engine Works, Philadelphia, Pa., make the largest display of gas engines in point of number. These engines occupy a large space in the Machinery Building. Here are found eight gas and gasoline engines. Of these engines, six are shown in constant operation. One of the active engines is operating a pump and two are used for generating current for the electric lighting of the exhibit. One of these engines is directly connected to a generator and one runs a dynamo with a belt. This is done for the purpose of showing how steadily, under any condition, the Otto engines will run electric generators. These engines are all of the well-known Otto type and range from 3½ to 60 horse-power. A portable engine is displayed, which is intended for the use of gasoline.

Mietz.

August Mietz, 128 to 138 Mott street, New York, exhibits four of the Mietz & Weiss kerosene and gas engines on the main floor of the Machinery Building. The engines shown are of 20, 6, 2 and ½ horse-power. Two of these engines are operated with kerosene oil and two with gas. A notable feature of the kerosene engines is that they can use crude oil as well as kerosene. This enables them to be operated to special advantage in certain districts, and much greater economy is realized. All these engines are of the two-cycle horizontal type, exploding at every revolution. The kerosene engines have a blue burner furnished with each engine, which is used for a few minutes before starting, the kerosene being vaporized in the cylinder and there mixed with air for combustion. The engine has no slide valve, no electric and no tube igniter, which is a feature appreciated by wood workers and others operating on inflammable material. All working parts are inclosed, avoiding all danger to inexperienced attendants.

Weber.

The Weber Gas & Gasoline Engine Company of Kansas City, Mo., have their exhibit on the main floor of the Machinery Building. They show three of their engines, two of which are of 8 horse-power and one is of 2½ horse-power. All of these engines are shown in operation, performing various functions. One of the large engines is connected with a hoist to illustrate the use to which many of the company's engines are being applied. They are manufacturers of hoists as well as engines. These engines are all of the horizontal type. A special feature of the Weber engine, protected by patent, is the regulation of the time of ignition. The time of the ignition can be regulated by the operator while the engine is in motion, thereby effecting a large saving of the fuel, as well as preventing the engine from starting backward. All engines are fitted with both tube and electric igniter. The gasoline used in these engines is used in its natural state, with no intermediate gas making machinery or appliances. From the time the gasoline is put into the tank until its product is exhausted through the escape pipe from the cylinder, the gasoline is closely imprisoned between solid iron walls, so that no gasoline can escape, and thereby all danger of fire is avoided. The valve gear is incased in an iron housing, perfectly dust and grit proof, and runs constantly in oil, thus insuring complete lubrication at all times and reducing the wear to a minimum. The governors of these engines are all of original design, enabling the speed of the engine to be instantly changed while in motion.

Foos.

The Foos Engine Company, Springfield, Ohio, exhibit a 13 horse-power engine as a specimen of their line of gas engines, which forms part of the joint exhibit of this company and the Foos Mfg. Company on the main floor of the Machinery Building. This engine is in operation running a number of Foos grinding mills. This engine is built on the four-cycle principle, giving an impulse at every alternate revolution of the fly wheel, receives charges of fuel on the "hit and miss" system, and works equally well with either gas or gasoline. All the principal working parts are assembled on one side as far as good mechanical construction will admit, to permit the engine to be installed in situations which may render one side inaccessible. These engines are of the horizontal type, having a bed of ample length and width, designed to resist great strain. The Foos patent igniter is used with these engines, being fired by an electric spark. The igniter consists of two steel blades, one of which revolves on the shaft. The revolving blade comes in contact with the fixed blade and at each rotation admits a large electric spark, while at the same time the wiping contact of the two blades cleans off the burnt carbon and scale, preventing the incrustation of their points, which in ordinary construction is the cause of much trouble. The inlet valve is lifted positively by a lever and closed by a strong spring, instead of relying on the suction in the cylinder to lift and open it. The valves are so situated that they can be ground in on their seats. The governor is of the centrifugal pattern and regulates the supply of fuel by cutting out the charges beyond what is required to maintain proper and uniform speed. The company build engines of 1½ to 250 horse-power, adapted to all power purposes. Engines of high power are built with double cylinders.

Globe.

The Pennsylvania Iron Works Company, Philadelphia, Pa., exhibit specimens of their Globe gas and gasoline engines on the main floor of the Machinery Building. These are all vertical marine engines and comprise a one cylinder 3 horse-power engine, two cylinder 6 horse-power engine and four cylinder 25 horse-power engine. They are builders of specially designed engines for use in propelling vessels.

The Russian Sugar Question.

WASHINGTON, D. C., October 15, 1901.—The Treasury Department has won another victory in the controversy as to whether Russia pays a bounty on exported sugar, which some months ago resulted in the issuing of a Russian ministerial decree placing retaliatory duties upon an important list of American manufactures of metal. The Department having held in a general order to collectors that the manipulation of the Russian internal revenue tax on sugar, which is remitted on exportations, amounted to a bounty, Collector Stone of the port of Baltimore levied a countervailing duty of 70 cents per hundred pounds on an importation of Russian sugar made by Robert Downs, a commission merchant of that city. Mr. Downs appealed to the Board of General Appraisers, which sustained the collector, whereupon the case was taken into the United States Circuit Court and argued at great length by representatives of the Government and the importer. Judge Morris, who heard the case, has just handed down a decision in which he upholds the contentions of the Government and dismisses the importer's appeal with costs.

The attorneys for the importer in this case presented as their principal contention the declaration that the legislation imposing the internal revenue tax on sugar in Russia was intended simply to avoid the evils of overproduction by controlling the output designed for domestic consumption, and at the same time furnishing an outlet through exportation, which would enable manufacturers to run their plants with the greatest possible economy. For the United States the District Attorney asserted that the rebate certificates issued on exportations of sugar operated as a direct bounty for the reason that they enabled the holder to increase his output for domestic consumption while the general system of taxing sugar limited the total production in such a way as to maintain the domestic price. After a careful review of evidence and arguments Judge Morris has rendered a decision in which he affirms practically all the contentions set up by the Government.

The decision of the Circuit Court is regarded here as greatly strengthening the position of the United States in its demand that Russia shall withdraw Minister De Witte's decree levying discriminating duties on American manufactures of iron and steel. The position of the Treasury Department has now been reinforced not only by the Board of General Appraisers, but by the courts, while the Russian decree has nothing more to sustain it than the mere ministerial declaration upon which it was issued. Since the question was taken into the courts Minister De Witte has advised this Government that Russia stands ready to rescind the decree if the Treasury Department will cancel its order levying countervailing duties on Russian sugar. In reply the Secretary of State has declared that the original ruling of the Treasury Department was based upon a mandatory statute which was not acted upon until a careful investigation of the Russian laws and regulations had been made, and further, that the matter now being in the hands of the courts the executive branch of this Government could not intervene. Since this exchange of diplomatic notes this Government has not heard from any representative of Russia concerning the matter. The decision of the Circuit Court will furnish the basis for an emphatic representation by the State Department to the effect that articles 6 and 11 of the Russo-American treaty of commerce and navigation have been violated by Minister De Witte's decree. Article 6, which applies specifically to this case, is as follows:

"No higher or other duties shall be imposed on the importation into the United States of any article the produce or manufacture of Russia, and no higher or other duties shall be imposed on the importation into the Empire of Russia of any article the produce or manfacture of the United States, than are or shall be payable on the like article being the produce or manufacture of any other foreign country. Nor shall any prohibition be imposed on the importation or exportation of any article the produce or manufacture of the United States or of Russia, to or from the ports of the United States, or to or from the ports of the Russian Empire, which shall not equally extend to all other nations."

Article 11 is what is known as the most favored nation clause and provides that "if either party shall hereafter grant to any other nation any particular favor in navigation or commerce it shall immediately become common to the other party, freely where it is freely granted to such other nation, or on yielding the same compensation when the grant is conditional."

In invoking these provisions of the treaty the State Department will take the position that Russia has levied retaliatory duties on manufactures of iron and steel coming from the United States which are not levied upon similar products proceeding from any other country and will defend the action of the Treasury Department in levying countervailing duties on Russian sugar on the ground that similar action is now taken with regard to the sugar of every bounty paying nation in the world and therefore could not be construed as a discrimination against Russian commerce. It is expected that Ambassador Tower at St. Petersburg will be instructed to lay before the Russian Government the decision of the Circuit Court and to urge the speedy withdrawal of the obnoxious decree against American metal manufactures.

It is, of course, possible that an appeal will be taken to the United States Circuit Court of Appeals and eventually a question of law may be developed that will require to be certified to the United States Supreme Court, but these steps are not now regarded as essential to determine the merits of the question.

Importance attaches to the decision of the Circuit Court for another interesting reason—namely, that the validity of the Treasury ruling having been upheld by the United States courts it will now be in order for Russian importers of American metal manufactures to investigate in the Russian courts the legality of Minister De Witte's decree. This suggestion was made by Treasury officials some time ago, but has not been acted upon pending a judicial decision covering the propriety of the action of the Treasury Department. This action having been upheld, it is felt that the opportunity of testing the Russian decree in the Russian courts should not be neglected, especially in view of the very strong protests against it registered by Russian importers and consumers of American metal products. W. L. C.

Lake Superior News.

The Copper Country.

DULUTH, MINN., October 14, 1901.—Copper shipments by lake for September were 1000 tons under my estimate, so that the total shipment of the year has been about 62,000 tons. The accumulation of copper at Dollar Bay docks from the Tamarack, Osceola and Isle Royale companies is to be moved, however, and this will make a larger shipment for the remainder of the season. This accumulations amounts to about 7200 tons, to which will be added 1800 tons more by the close of navigation. It is understood that all is to go down lakes, and the first shipment of 500 tons has been made. This single shipment is more than these mines had sent down all the season. For the week these shipments will be 3000 tons. Other mines at the lake have shipped clean, and are said to be behind in their orders. If this is true the production of this year is less by a considerable amount than that of 1900.

Reference has been made to the new producers going into commission and to the new mills building around the Houghton and Antonagon districts. The number of stamps that have recently started or that will probably get into line within 10 or 12 months is as follows: Adventure, 3; Champion, 2; Isle Royale, 3; Mohawk, 2; Quincy, 3; Wolverine, 2; Baltic, 2; Franklin, 3; Mass, 2; Osceola, 3, and Trimountain, 2. This makes 27 modern stamp heads for the lake country. It is true that some of them have replaced older and less capable machinery and cannot therefore be counted as entirely new, but the 27 will be able to stamp not less than 3,750,000 tons of rock per year, and it will be a great disappoint-

ment to the managers of the least of these several properties if it is not able to effect a saving of 1 per cent. of copper. Some will doubtless run much better. Indeed some are expected to show a return of almost double that, and some are already doing so. To offset this increase there will without any doubt be a curtailment in some of the older mines, in fact this has commenced, had commenced before the recent difficulty. The amygdaloid shafts of Calumet & Hecla will probably not be much of a producer for some time, and at one time much was expected of this new mine at once.

With one head in commission, the Mass mill is making 225 tons of copper a month, and a second head will be in operation with plenty of opened ground soon after the new year. Before that time the Baltic's new two-stamp mill will be running, and Baltic rock last month averaged 2 per cent. of copper in the Atlantic mill. By January the Osceola will be stamping 80,000 to 90,000 tons of rock monthly, for it will then have six modern stamps. When the second new three-stamp mill is ready the old four-stamp mill will be abandoned. The steel construction at the Adventure's three-stamp mill has commenced, and will be completed during the winter. The mill should be in commission by spring. The Wolverine mill will be ready some time next summer, and will replace a one-stamp mill now on the property. Both the Champion and Trimountain, mines from which much is expected, will have their two-stamp mills ready late next year. Isle Royale's splendid mill is in operation, and has been for some months, but the results are scarcely up to expectations.

A recent experiment at the deep shaft of Tamarack mine in which a pair of plumb bobs were dropped 4250 feet has shown some interesting results. In the first place the two lines diverged as they dropped, and at the extreme depth showed an increase of distance from each other of 0.07 foot. At a slightly less depth in No. 2 shaft this divergence of two lines was 0.10 foot. No. 24 piano wire was used in the experiments, and with 50-pound weights attached this wire shortened 17 inches after the bob had been immersed in oil, on account of the buoyancy of the oil. Being carefully drawn aside a foot and permitted to swing as a pendulum, one of the wires became motionless in 20 minutes. These experiments were conducted with the greatest care, and their results are unquestionably accurate.

Iron Ranges.

Operators of Mesaba mines, especially those that have been selling ores at a reduction from the general list, are sold up for the year, and have of late been refusing orders for lots of any size. Shipments have been delayed the past week by bad weather, of which there may be more and more from now out. Ore has just been found on the Mesaba in the northwest ¼ of section 2, town 58, range 16, nearly adjoining the Biwabik property. It is said to be of good quality. Ore has also been found in the northeast of the northeast ¼ of section 28, town 58, range 20, that shows a phosphorus assay of 0.022 and is well up in iron. There should be a fairly large body of ore here, and the physical character is expected to be especially good. On the same range, in section 31, town 57, range 22, the results of explorations are said to be good. The Donora Mining Company (Union Steel Company) have been exploring close by, and have an option that expires in a few days. Three miles west near Oxhide Lake explorations are under way, but with what success is not known. Still further west the old Buckeye is to be re-explored. On the Marquette range the Donora Mining Company have taken an option on the Barasa, and will re-explore it. The Lake Superior Iron Company have put their new No. 2 hematite shaft into commission. It saves 1000 feet in tramming ore. The shaft is now 350 feet deep, and will be continued steadily to the depth of 600 feet. At the Champion the shaft going down in the new find is sinking steadily. It will go down 100 feet, when it is expected that something will be definitely known as to the find, which looked so well on the surface. So far the new find has been quite narrow, but it is hoped that with depth it will widen to a minable ore deposit. The mine inspector of Marquette County has made his annual report, showing the number of operating mines in the county to be 30, of quarries one and of explorations four. There were at the time of the report 5200 men employed in the mining industry, and there were 5.66 deaths by accident per 1000 employees during the year.

On the Menominee range the Pewabic Iron Company have taken up the exploration of new ground, and are working lands close to the Hilltop and Great Western at Crystal Falls. These lands are supposed to be among the most promising near that town. At the Dober, near Stambaugh, the Oliver Iron Mining Company will put in a crusher to reduce the ore mined to a size suitable for the furnaces. Ore is said to have been found on the Kinney farm near the Dober. A shaft will be sunk at the Grininger property of the Verona Iron Company (Pickands, Mather & Co.). A body of non-Bessemer ore was proved here some time ago. There is an overburden of 80 feet of quicksand and gravel. The Grininger adjoins the Dober mine. At Iron Mountain the Millie mine has closed for the season with shipments of about 12,000 tons. It is a part of the Chapin deposit. It is now believed that the West Ludington ore deposit is more than 100 feet wide, and it is being cross cut. It is non-Bessemer, and is apparently a large deposit. The present shaft will be sunk to 600 feet and the ore thoroughly proved. The old Forest mine shaft of the Oliver Company has been unwatered after many difficulties. A pumping plant to handle 1200 gallons a minute will be installed at once. Underground some ore is being found.

Prof. Raphael Pumpelly of Newport, who made a thorough examination of the Marquette range 25 years ago, and of the Gogebic range for the canal company shortly afterward, has been on the Marquette the past week looking into some explorations on lands in which he is interested. He is of the opinion that much new ore remains to be found on that range, and has given options on lands near Republic, in which he feels sure there may be results.

D. E. W.

MANUFACTURING.

Iron and Steel.

John Mohr & Sons, 32 Illinois street, Chicago, are pushing the work of construction on the third of the new blast furnaces now being built by the Colorado Fuel & Iron Company at Pueblo, Col. The firm have had the contract for all the plate work in connection with these furnaces. The first of the furnaces was recently put in blast, the second is rapidly approaching completion and work on the third has considerably advanced. The boiler shops of this firm are actively employed at present, with a great deal more work in sight.

At the annual meeting of the New Haven Iron & Steel Company of New Haven, Conn., held at Camden, N. J., October 7, the old directors were re-elected.

The Racine Steel & Iron Mfg. Company, Racine, Wis., have placed contracts for important additions to their plant. They will build an extension to the foundry, to be 70 x 150 feet, and an extension to the machine shop, 60 x 130 feet. Both these buildings will be constructed of brick, with stone foundations.

The White-Good Steel Company, Chicago, were recently incorporated in Illinois with a capital stock of $15,000. Incorporators, Lawrence P. Good, Byron White, Thomas J. Symmes.

The Bessemer works of the Republic Iron & Steel Company, at Youngstown, Ohio, is turning out from 400 to 500 tons of steel every 24 hours. When the new mills now being added to this plant have been finished the capacity will be about doubled.

The McKeesport Mfg. Company, recently organized at McKeesport, Pa., are said to be drawing plans for the building of a new tin mill, to be located somewhere along the Monongahela River.

The Southern Supply Company, Mobile, Ala., removed into their new building, which is their own property, at 161, 163 and 165 North Commerce street, on September 15. Its dimensions are 140 x 120 feet, of three floors. The ground floor is taken up with office and the placing of brass and steam goods, railroad track material, iron pipe and fittings; the second floor is occupied by wood and iron pulleys, shaft fittings, belting, log cart material, logging tools, &c., while the third floor is devoted to the storage of rope, cordage and ship chandlery, blacksmiths' tools and appliances, prepared roofing blocks, &c. The company also own the adjoining lot, of same size as that covered by their buildings, which they will utilize for the storage of boilers, engines and other heavy machinery, which they contemplate handling on a much larger scale than they have heretofore. Busi-

ness with the company has been 10 to 12 per cent. better this year than last, which is all the more gratifying as from general business conditions they anticipated it would be considerably less.

The Lukens Iron & Steel Company, Coatesville, Pa., have broken ground for the erection of their new 116-inch plate mill, which when completed will increase their capacity of sheared and universal plates to about 400,000 tons per year.

The Cleveland-Canton Spring Company, Canton, Ohio, started up their new plant October 12, making oil tempered hand fitted springs, and are now under full swing.

A new wire plant, which will be known as the Fox River Wire Works, is to be built at Appleton, Wis. L. H. Elsner, who was formerly connected with another plant, is to be the proprietor. The factory will be in running order before the first of the year. Work upon the foundation has begun.

The new open hearth furnace, recently built at the Penn Steel Casting Company's works at Chester, Pa., is now in successful operation. It has a capacity of 33 tons. The two 25-ton furnaces are to be enlarged to the same capacity as the new one.

The Highlands Iron & Steel Company, Terre Haute, Ind., are completing a plant for the manufacture of bar iron and steel, and expect to have it in operation early in November. The plant will be under the supervision of John Smith and William Myers, formerly of the Indiana plant, of Muncie.

General Machinery.

The Farnham Machine Company have been organized and are about ready to manufacture the following pieces of machinery: Expansion pulleys, cylinder drives, couch rolls, friction clutches, grate bars, suction pumps, stuff pumps and machine cutters. The first five are the invention of the management of the Fort Orange Paper Company, Castleton-on-Hudson, N. Y.

Gilbert Combs has retired from the the firm of Combs & Bawden, proprietors of the Freehold Iron Foundry & Machine Shop, Freehold, N. J. John H. Bawden, the junior member of the firm, will take in partnership his son, John H. Bawden, Jr., and his son-in-law, Herbert J. McMurtrie. The new firm will be known as J. H. Bawden & Co.

Lewis C. Weldon & Co., Phillipsburg, N. J., have leased the Drinkhouse foundry and machine plant in that city, and after making the necessary improvements will operate it, doing a general foundry and machine business.

The Knoxville Ice Company, Knoxville, Tenn., have contracted with the York Mfg. Company, York, Pa., for a new refrigerating machine of 100 tons capacity per day. The company will also install an air compressor for lifting the water from deep wells.

The Haubtman & Loeb Company, New Orleans, La., report trade very brisk. Although it is nearing the close of the season for selling machinery, the oil boom in Texas and Louisiana has created an unusual demand for drilling outfits. The rice season also from having been fairly prosperous encourages parties to place large contracts for machinery in advance for next year, while the outlook in the sugar business is equally good.

The American Fire Brick Company, Lock Haven, Pa., recently organized with a capital of $125,000, have begun active operations toward erecting their new plant on 12 acres of ground recently purchased, between the Beach Creek and Bald Eagle railroad tracks, sidings from which will be constructed to the yards. The plant will consist of a main building, 70 x 212 feet, with an ell, 70 x 40 feet, for the grinders and pans; several large sheds for storage purposes, and six kilns, each 39 x 35 feet. The latest improved machinery will be installed and it is expected that active operations will begin in the spring. The output will be about 30,000 fire brick per day. The officers and directors are A. Munro, president; Reese Kintzing, secretary and treasurer; R. W. Fredericks, H. T. Hall and A. W. Brungard.

The American Tobacco Company, New York City, have awarded the contract to J. Henry Miller at $20,000 for extending the plant of Marburg Bros., Baltimore, Md. The company advise us that they are not yet in the market for machinery.

The Grove Machine Works, Columbus Grove, Ohio, have been sold at mortgagee's sale to Alfred Morris, who will operate them under the name of the Grove Machine & Saw Works.

The Sterling Iron Works, Springfield, Mo., have incorporated with a capital of $50,000, to conduct a general foundry and machine business. The large plant of the Springfield Stove Works has been secured, in addition to which new blacksmith and boiler shops, 50 x 120 feet, will be erected. New and modern machinery is being installed and the plant otherwise improved. They expect to start up about December 1. The officers and directors are H. C. Mosher, president; H. T. Hornsby, vice-president and treasurer; R. P. Bowyer, secretary; Arch. McGregor, O. L. Milligan, H. F. Fellows and William B. Sanford. Messrs. Mosher and Hornsby were formerly connected with the Crescent Iron Works, and Mr. McGregor is a member of the McGregor-Noe Hardware Company.

The Buehler Machine Company, St. Mary's, Ohio, general machinists, recently incorporated, have acquired the plant formerly used by the Anglaise Machine Company and have equipped it with new machinery, nothing remaining of the old firm except the buildings. Next spring they propose to increase the business and will then go into the manufacture of gas engines and oil well supplies, the same as formerly manufactured by the Anglaise Company.

The American Cigar Company, 1389 Broadway, New York City, are awarding contracts for the erection of a factory at South and Mechanic streets, Camden, N. J., to cost about $50,000. The company are not yet in the market for machinery.

Fred. H. Pike has about completed and will shortly put into operation his new foundry and machine shop at East Randolph, N. Y. The plant consists of a foundry, 26 x 48 feet; machine shop, 16 x 28 feet, and stock room, 12 x 32 feet.

The American Metal Wheel & Toy Company, 212 Chamber of Commerce, Toledo, Ohio, have organized, with a capital of $50,000, for the manufacture of wire wheels for children's carriages, hand implements and other purposes, also a full line of velocipedes, tricycles, &c. A site has been selected upon which a three-story factory, 60 x 150 feet, will be erected, which will be equipped with machinery of the latest design at a cost of about $20,000. They expect to be in operation by the first of the year. The incorporators are Charles N. Bishop, Orson W. Crocker, C. E. B. Lamson, Charles R. Clapp and Ira C. Taber.

The Ohio Steel & Iron Specialty Company, Cuyahoga Falls, Ohio, have organized for the purpose of manufacturing hollow staybolts, solid staybolts, angle irons, tee irons, channels, light structural iron, &c. Ground has been purchased and grading is now going on for the new plant. The contract for the building has been let, and the contracts for the machinery and supplies will all be let this week. About 75 hands will be employed. The officers are E. A. Henry, president; Geo. W. Reid, vice-president; L. H. Whitcomb, secretary, and H. B. Hamlen, treasurer.

The Fernholtz Brick Machinery Company, St. Louis, Mo., manufacturers of Fernholtz improved brick press, have broken ground for the erection of a two-story factory, 80 x 100 feet, on the tracks of the Missouri Pacific Railroad, which will be built on up to date plans and will be equipped throughout with travelers and other modern conveniences. They expect to be in their new quarters by the first of the year.

The Carlin Machinery & Supply Company of Allegheny, Pa., dealers in second-hand machinery of all kinds, have shipped a steam spring tester to the Canton Spring Company of Canton, Ohio.

Report has it that the Westinghouse Air Brake Company of Pittsburgh are negotiating for the purchase of the plant of the Christiansen Engineering Company at Milwaukee, Wis. This concern manufacture an air brake patented by Mr. Christiansen.

The Kilby Mfg. Company of Cleveland, builders of beet sugar machinery, find that the beet sugar industry has a most promising outlook for another season and report that orders are developing remarkably early for another season's business. With several contracts for this year's delivery not yet completed, they have already closed contracts for three new plants. Two of them are for Michigan parties, one the McComb Sugar Company, McComb, and the other for the Valley Sugar Company of Carrollton. The third is for the Wallaceburg Sugar Company of Wallaceburg, Ontario. They will have a capacity of 600 tons per day each, and the Kilby Company will furnish the entire equipment, including a complete machine shop and large power house for each.

F. B. Stearns & Co., Cleveland, Ohio, manufacturers of hydrocarbon automobiles, have experienced such a profitable season that they are making plans to double their capacity for next year. They will erect a new building, 60 x 150, which will be utilized as machine shop, and for which they will buy a number of new tools.

The Boland & Gschwind Company, New Orleans, La., have changed the location of their factory to the corner of St. Thomas and Chippewa streets. Their principal lines of manufacture are irrigating, draining and rice machines.

The Cleveland Mfg. Company of Chicago have been incorporated under the laws of Illinois, with a capital stock of $25,000, to manufacture machinery and tools. Incorporators, R. L. Cleveland, W. S. Harris, R. F. Harris.

S. C. Edmunds & Co. of Montpelier, Ind., are building a new machine shop. See "Miscellaneous."

The plant of the Gibsonburg Machine Company, Gibsonburg, Ohio, was totally destroyed by fire last week, entailing a loss of nearly $20,000.

The machine shop of Briggs & Dillon, Benton, Ill., was burned October 13. The loss amounts to $2200.

The Racine Steel & Iron Mfg. Company of Racine, Wis., are building an extension to their machine shop. See "Iron and Steel."

The machine shop and foundry of Kenney & Co., Scottdale, Pa., were last week destroyed by fire. The loss is about $80,000.

The machine shop and brass foundry of Halstead & Co., 1129-1131 Cherry street, Philadelphia, Pa., suffered a $6000 loss by fire October 12. The structure and nearly all of the machinery were wrecked.

Engines and Boilers.

The Marinette Iron Works Mfg. Company, Marinette, Wis., manufacturers of saw mill and mining machinery and Walrath gas engines, have substituted a special alloy, which is made in Germany, to take the place of platinum as gas engine igniter points. The company advise us that as far as they have been able to determine from tests made it is equal to the platinum points in every respect and more advantageous, as points can be made much larger and more serviceable.

The Dover Boiler Works, Dover, N. J., will next week start the erection of a new boiler shop, 150 x 80 feet, to be located on the Central Railroad of New Jersey and near the Delaware, Lackawanna & Western Railroad. A 5-ton and a 10-ton traveling crane and other improved machinery will be installed.

The Dover Boiler Works, Dover, N. J., will next week start the erection of a new plant, to be located on the Central Railroad of New Jersey and near the Delaware, Lackawanna & Western Railroad.

The Narragansett Machine Company, Providence, R. I., manufacturers of gymnastic apparatus and builders of small and special machinery, and the W. J. Hood & T. D. Rice Mfg. Company of Central Falls, R. I., engaged in the wood turning and enameling business, will shortly consolidate their interests. This consolidation of the two plants requires several new buildings and a new boiler and engine plant.

The Duluth Gas Engine Works, Duluth, Minn., have incorporated, with a capital stock of $50,000, for the manufacture of gas engines, machinery, &c. The incorporators are Adolph A. Williams and Axel E. Zimmerman of Duluth and Gust. W. Johnson of West Superior, Wis.

The Port Huron Engine & Thresher Company, Port Huron, Mich., whose corporate existence will soon expire, are arranging for a reorganization of the company with increased capital. The new company will be incorporated on the 17th inst. under the same name with $750,000 capital stock, all of which has been subscribed. The business will be continued under the same management and along the same lines as heretofore.

The Eclipse Machine & Boiler Works, West Fourteenth street and Western avenue, Chicago, are making additions to their plant. These consist of a boiler shop 50 x 100 feet and 25 feet high; blacksmith shop, 40 x 47 feet; a machine shop, 52 x 160 feet, and a two-story office building, 25 x 54 feet. They will be substantially constructed of brick and stone.

The International Power Company, of 253 Broadway, New York City, inform us that there is no truth in the report that they had sold the plant of the American Wheelock Engine Company, at Worcester, Mass., to a new corporation.

The Modern Steel Structural Company of Waukesha, Wis., announce that they are erecting a new power house which is to be equipped with a 50 horse-power Nash engine. S. B. Harding is president, and F. W. Moore chief engineer of the company.

Foundries.

The American Grass Twine Company have assumed control of the large malleable casting plant at North St. Paul, Minn., which has heretofore been operated by the Minnesota Malleable Iron Company. The latter company operated the plant under a lease which has expired. As the American Grass Twine Company are owners of the entire property of the old Wood Harvester Company, which included the malleable iron works, the termination of the lease caused the latter plant to revert to them. They will not only manufacture the castings required for their own business, but will also make miscellaneous castings for outside establishments.

The George H. Smith Steel Casting Company, Milwaukee, Wis., have arranged for incorporation, with a capital stock of $50,000. Incorporators, George H. Smith, Frank E. Hinners, Francis F. Pfeiffer.

The Northern Engineering Works, Detroit, Mich., report the following recent sales of the Newten cupola: One 72-inch to the Wm. Tod Company, Youngstown, Ohio; one 72-inch to the Michigan Stove Company, Detroit; two 60-inch to the Hardie-Tynes Foundry Company, Birmingham; one 72-inch to the Yale & Towne Mfg. Company. A steadily increasing sale of this cupola furnace is reported by the manufacturers.

The new foundry of the Girard Foundry & Machine Company, at Girard, Ohio, is about finished and will be put in operation this week. The concern will manufacture gray iron castings and do general machine work. The officials are E. Hartzell, president; E. L. Hauser, vice-president; Frank Deemer, secretary and general manager, and Wade R. Deemer, treasurer.

The Racine Steel & Iron Mfg. Company of Racine, Wis., are building an extension to their foundry. See "Iron and Steel."

The Eastern Foundry & Mfg. Company of Pittsburgh have bought 3 acres of land in that city, on which is a large building and which will be used by the company for a foundry. W. E. Hartman of McKeesport is president of the concern.

The new foundry of the Youngstown Engineering Company, at Youngstown, Ohio, is about completed and has been put in operation. It is the intention of this concern to build a new works for the manufacture of open hearth steel casting and plans for this new plant are now being made.

The Gadsden Pipe & Foundry Company, Gadsden, Ala., have organized with a capital of $50,000, for the purpose of manufacturing soil pipe. Work has been started on the plant and they expect to have it completed and in operation in January. W. S. Fletcher is president of the company.

The Racine Malleable & Wrought Iron Company, Racine, Wis., manufacturers of gray iron castings, wagon and saddlery hardware, have increased their capital stock from $25,000 to $200,000, and are now engaged in building a new foundry, 400 x 75 feet, and making other improvements in machinery, &c. It is the intention of the company to make the harness hardware line a special feature of their business.

The Colvin Foundry Company, Providence, R. I., manufacturers of iron castings, will enlarge their plant by the erection of an addition, 100 x 50 feet, to the foundry, of brick and steel, with monitor roof, slated, and a new office building and pattern shop, 125 x 60 feet, of brick and steel, with granite trimmings and tar and gravel roof, three stories. The pattern shop will be equipped with an elevator and all the buildings will be lighted by electricity.

Fred. H. Pike has just completed the erection of a foundry at East Randolph, N. Y. See "General Machinery."

The Sterling Iron Works, Springfield, Mo., recently incorporated, will conduct a general foundry and machine business. See "General Machinery."

The Vulcan Foundry Company, Hamilton, Ohio, manufacturers of gray iron castings, have merged their business into a stock company. The company consider their present facilities adequate to meet all reasonable demands of their customers and do not contemplate putting up any new buildings at present.

The new plant of the Buffalo Car Wheel Foundry Company, Buffalo, N. Y., organized several months ago, is now in full operation. The company inform us that they have enough orders on the books to keep the plant busy for several weeks. The officers are George W. Miller, president; Albert B. Neill, general manager, and B. J. Healy, general superintendent.

On the 14th inst. the first heat was run by the Norwood Foundry, Cincinnati, Ohio, which has been erected by the Hoefinghoff & Laue Foundry Company, together with other interests. There has been some delay in getting the large traveling crane, and the foundry will not turn out as heavy work at once as it will later on.

The Mobile Foundry Company, Mahler & Ollinger, proprietors, Mobile, Ala., report that they have been full of work during the whole year. They principally do saw mill, steamship, dredge and railroad repairing.

The Solid Steel Casting Company have added another annealing furnace to their plant at Chester, Pa.

The Eynon-Evans Mfg. Company of Philadelphia, Pa., have just completed a large new core oven for their brass foundry, which, together with a recent addition to their cleaning shed, will enable them to handle their increasing business to greater advantage. When improvements which are now being made to the foundry are completed they will have a modern and most complete shop in every particular.

The Northwestern Malleable Iron Company, Milwaukee, have purchased additional land, 245 x 625 feet, whereon it is intended to build a new foundry 70 x 450 feet. This will make a total length of 2500 feet of foundries, giving 170,000 square feet of molding room. Two additional melting furnaces are to be purchased, giving the company a capacity of 100 tons of malleable castings per day. The entire plant is being electrically equipped. Industrial railway, pneumatic hoists, &c., are to be installed. The officers of the company are Frederick W. Sivyer, president, and William A. Draves, vice-president.

Owing to the increased demand for their improved wood working tools, the Bentel & Margedant Company, Hamilton, Ohio, will erect a foundry, 112 x 48 feet, in connection with their present plant, which will be equipped with all modern conveniences, including an improved traveling crane, operated by an electric motor.

Miscellaneous.

S. C. Edmunds & Co., manufacturers of valves, valve cups, &c., Montpelier, Ind., are building a new plant to provide better facilities for the manufacture of their specialties. They are constructing a two-story frame machine shop, 28 x 50 feet, and a one-story brick foundry, 24 x 30 feet. The firm started some time since in a very small building on an extremely limited scale, and have been quite successful in their efforts to develop a business.

Samuel S. Fritz, Philadelphia, Pa., manufacturer of umbrellas and parasols, will erect a nine-story factory, 60 x 340 feet, with two wings 20 x 40 feet, at Diamond and Tenth streets.

The McKinnon Dash Company, Syracuse, N. Y., manufacturers of leather dashes and fenders, are erecting a two-story building, 40 x 40 feet, which will be used for shipping room and offices. The present building will be used for manufacturing purposes. No machinery will be required.

The Iron and Metal Trades.

With ample work for blast furnaces, steel works and rolling mills assured beyond a doubt for the balance of the year, interest centers in the study of conditions as they bear upon the first quarter and first half of next year. The situation is perplexing in some respects, because it possesses some unusual features. Conspicuous among these, of course, is that the Tube, Sheet and Tin Plate mills are under enormous pressure to meet past engagements, and that it will require months of work to restore to their normal condition the stocks which the trade must carry, from the great jobber to the cross roads store. Under the circumstances, it is quite impossible to judge whether current and prospective consumption in these important lines is or is not above the normal.

Inferences drawn from other branches of the trade permit of different deductions. In Steel Rails and Structural Material the outlook for next year is pronounced excellent, and that view is backed by fact that large orders are at hand or are in sight. In the Plate trade the future is not quite so clear, so far as tonnage is concerned, as the immediate future of the shipbuilding industry will hinge largely upon developments in Congress. The Wire industry is feeling the effects of the growing competition. It is, in fact, a proof of the enormous general demand thus far that this has not told much earlier.

On the other hand, the prospects for future export trade at anything like prices on a parity with our home market are gloomy indeed, so far as the heavy lines are concerned. The situation on the Continent, and notably in Germany, shows no indications of relief. Pressure from that quarter on the international markets is increasing, and when the readjustment of values on old contracts for raw material has been completed there may be room for a further decline of prices. Steel Billets are now being offered at about $19 to $20, Antwerp, with corresponding prices for Sheet Bars, Rods, &c., which affords some conception of what prices must be met.

Reports from the principal markets indicate continued activity in Pig Iron. The November output of the Valley furnaces has been taken up with the exception of a moderate block of Bessemer Pig. The recent purchases of the leading interest in the Central West have included considerable Forge Iron, the balance being chiefly Basic Pig. It is not true that large lots of the latter have been sold for Pittsburgh delivery by Southern furnaces. Cincinnati notes further activity in Southern Pig, and St. Louis reports sales of two lots aggregating 25,000 tons.

In the Chicago Bar trade there has been good buying of Steel Bars, but the tonnage of Bar Iron has fallen off. Very large amounts of Structural Material have been taken in Chicago by contractors and by architectural works. An interesting point is that the largest single order was placed for Shapes by an outside consumer. In the Rail trade a sale of 15,000 tons for Cuba was made by an Eastern mill. It is probable that the Pennsylvania Steel Rail order for 175,000 tons will be placed this week.

A Comparison of Prices.

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Oct. 16 1901	Oct 9. 1901.	Sept. 18, 1901.	Oct 10, 1900.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia	$15.00	$15 00	$14.75	$15.00
Foundry Pig, No. 2, Southern, Cincinnati	**13.75**	13.75	13.00	13.00
Foundry Pig, No. 2, Local, Chicago	*14.75*	14.50	15.00	14.50
Bessemer Pig, Pittsburgh	**15.85**	15.85	15.75	13.00
Gray Forge, Pittsburgh	**14.15**	13.75	13.50	12.75
Lake Superior Charcoal, Chicago	17.00	17.00	17.00	18 00
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh (nom)	**26.50**	26.50	24.50	16 25
Steel Billets, Philadelphia (nom)	.....	26.50	27.00	19 25
Steel Billets, Chicago, (nom)	.....	.....	.....	19 50
Wire Rods (delivered)	34.50	34.50	36.00	33.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	26 00
Spikes, Tidewater	1.80	1.80	1.80	1 40
Splice Bars, Tidewater	1.50	1.50	1.50	1 25
OLD MATERIAL, PER GROSS TON				
O. Steel Rails, Chicago	**14.00**	13.50	13.50	10.00
O. Steel Rails, Philadelphia	**17.50**	17.75	16 75	12.75
O. Iron Rails, Chicago	21.00	21.00	21 00	15 50
O. Iron Rails, Philadelphia	**19.00**	20.00	18 50	15.50
O. Car Wheels, Chicago	16.00	16.00	16 00	17.00
O. Car Wheels, Philadelphia	16.50	16.50	16 50	15.50
Heavy Steel Scrap, Chicago	**13.50**	13.00	12.50	10.00
FINISHED IRON AND STEEL, PER POUND:				
Refined Iron Bars, Philadelphia	1.60	1.63½	1.60	1.25
Common Iron Bars, Chicago	**1.70**	1.70	1.60	1 65
Common Iron Bars, Youngstown	**1.55**	1.50	1.50	1.25
Steel Bars, Tidewater	**1.62½**	1.65	1 60	1.25
Steel Bars, Pittsburgh	1.50	1.50	1.50	1 10
Tank Plates, Tidewater	1.75	1.75	1.75	1.25
Tank Plates, Pittsburgh	1.60	1.60	1.60	1 10
Beams, Tidewater	1.75	1.75	1.75	1.65
Beams, Pittsburgh	1.60	1.60	1.60	1.50
Angles, Tidewater	1.75	1.75	1.75	1.55
Angles, Pittsburgh	1.60	1.60	1.60	1.40
Skelp, Grooved Iron, Pittsburgh	*1.90*	1.90	2.00	1.40
Skelp, Sheared Iron, Pittsburgh	*2.00*	2.00	2.05	1.45
Sheets, No. 27, Pittsburgh	*3.15*	3.15	3.65	2.80
Barb Wire, f.o b. Pittsburgh	2.90	2.90	2.90	2.80
Wire Nails, f.o.b. Pittsburgh	2.30	2.30	2.30	2.30
Cut Nails, Pittsburgh	2.05	2.05	2.05	1.95
METALS:				
Copper, New York	**16.85**	16.50	16.50	16.67
Spelter, St. Louis	**4.10**	4 05	3.90	3.95
Lead, New York	4 37½	4.37½	4.37½	4.37½
Lead, St. Louis	4.25	4.25	4.25	4.27½
Tin, New York	*24.85*	24.40	25.90	28.75
Antimony, Hallett, New York	8.50	8.50	8.50	9.50
Nickel, New York	60.00	60.00	60.00	55.00
Tin Plate, Domestic Bessemer, 100 lbs., New York	4.19	4.19	4.19	4.19

Chicago.

FISHER BUILDING, October 16, 1901.—(*By Telegraph.*)

The market fully maintains its strength, although in some lines the demand is not so brisk as it was earlier in the month. It is possibly better for the trade that the demand has somewhat abated, as manufacturers are crowded with work, and a continuance of the heavy pressure would undoubtedly have caused a sharp upward movement in prices. It is quite difficult now to secure any material for immediate use. Consumers are paying a premium for such special forms of Finished Iron and Steel as they urgently need, and instances are continually transpiring in which other sizes are taken than those originally desired. Shortage of cars is causing much annoyance, and it is customary in taking orders for early delivery to insert the clause, "If cars can be secured."

Pig Iron.—A good healthy trade is in progress, which keeps sales agents quite busy, although the demand is not so brisk as during the preceding three or four weeks. Numerous buyers are coming into the market, placing orders for moderate quantities for delivery during the opening months of the coming year, and quite a sharp demand is noted for Iron for immediate shipment. Spot Iron is very scarce, it being particularly difficult to secure good Foundry grades. No complaint

is heard with regard to prices, the Southern furnace companies apparently maintaining the advance recently made, while the sellers of local brands have marked their price up slightly. We quote as follows:

Lake Superior Charcoal	$17.00 to $18.00
Local Coke Foundry, No. 1	15.25 to 16.00
Local Coke Foundry, No. 2	14.75 to 15.25
Local Coke Foundry, No. 3	14.25 to 14.75
Local Scotch, No. 1	15.25 to 16.00
Ohio Strong Softeners, No. 1	16.00 to 16.50
Southern Silvery, according to Silicon	15.40 to 15.65
Southern Coke, No. 1	15.15 to 15.40
Southern Coke, No. 2	14.40 to 14.65
Southern Coke, No. 3	13.90 to 14.15
Southern Coke, No. 1 Soft	15.15 to 15.40
Southern Coke, No. 2 Soft	14.40 to 14.65
Foundry Forge	13.40 to 13.65
Southern Gray Forge	13.15 to 13.40
Southern Mottled	13.15 to 13.40
Southern Charcoal Softeners, according to Silicon	15.50 to 16.50
Tennessee Silicon Pig	16.40 to 16.65
Alabama and Georgia Car Wheel	19.50 to 20.50
Malleable Bessemer	15.75 to 16.00
Standard Bessemer	17.25 to 17.50
Jackson County and Kentucky Silvery, 8 per cent. Silicon	15.75 to 16.25

Bars.—The scarcity of Steel Bars is a feature of current trade. Manufacturers are turning down numerous orders, because it is impossible for them to make the deliveries desired. Soft Open Hearth Steel Bars are especially difficult to secure. Bar Iron is in good demand, but the orders now being placed are by no means so large as at the opening of the month. The mill owners are not concerned over the falling off in the volume of business, as they are well supplied with work for the remainder of the year, and in some cases far into next year. Hoops are a very scarce article and substitutions are frequently made for sizes which cannot be had. Mill shipments are maintained at 1.70c., Chicago, for Common Iron, and 1.65c. for Soft Steel Bars. Jobbers report a heavy demand from their stocks, with assortments badly broken. The unsatisfactory deliveries being made by the mills are reflected in the character of the business now being received by jobbers, who find large consumers continually drawing on them for supplies. Small lots from stock are selling at 2c. for Common Iron, 1.90c. to 2c. for Steel Bars, and 2.50c., base, for Hoops.

Car Material.—The car builders continue to be large purchasers of all classes of material, but particularly Axles, Channels and other specialties.

Structural Material.—Business has recently been extremely heavy. One sales agency reports booking a single order for 8000 tons, while another reports sales aggregating 12,000 tons. Other houses are also enjoying a large trade, the tonnage not being disclosed. These order emanate from contractors who are erecting buildings, from architectural foundries covering their requirements for some distance in the future, and from manufacturing consumers who need Shapes for special work. What might be termed outside uses for Structural Material are steadily growing. The largest order placed last week came from a concern of this character. The demand for Angles is exceptionally strong, and a premium is being paid for early delivery. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.75c.; 18 inches and over, 1.85c.; Angles, 1.75c. rates; Tees, 1.80c.; Universal Plates, 1.75c. to 1.85c.; small lots of Beams and Channels from local yards are quoted at 2.25c.; Angles, 2c. rates; Tees, 2.15c.

Plates.—While the Plate manufacturers would like to see a heavier demand, the condition of business this week shows a gratifying improvement in orders, which, if continued, may eventually bring it up to what is desired. Jobbers also report a larger business in shipments from stock. Mill shipments are quoted as follows: Tank Plate, ¼-inch and heavier, 1.75c. to 1.80c., Chicago; Flange, 1.85c.; Marine, 1.95c. Jobbers are selling small lots from store at 1.90c. to 2c. for Tank, and 2.25c. for Flange, with the usual extras for heads, segments, lighter gauges, &c.

Sheets.—Although the mills appear to be making better deliveries, the supply of Black Sheets is not yet adequate to the necessities of consumers in this territory. Scarcity is also felt elsewhere, as indicated by orders received here for shipment from Chicago stocks, such shipments being made to Pittsburgh among other Eastern points. Prices of Black Sheets are still arbitrary, depending to a great extent on the condition of stocks, but may be quoted on a basis of 4c. to 4.10c. for No. 27. A stronger demand is experienced for Galvanized Sheets, and assortments are again badly broken, some of the leading jobbers finding Standard sizes running very short. Small lots are quoted at 65 off.

Merchant Pipe.—An increased trade is reported, which shows that consumers are not all able to wait until prices have receded to their old basis. The demand increases so steadily that it promises shortly to be quite active. Carload lots are now quoted as follows, random lengths: Black, ⅛ to ½ inch, 60 off; ¾ to 10 inches, 67 off; Galvanized, ⅛ to ½ inch, 47 off; ¾ to 6 inches, 55 off.

Boiler Tubes.—Jobbers report a less urgent demand for shipment from stock. The mills are in better position to make deliveries, and this has contracted the trade lately thrown on the jobbers. Quotations are as follows:

	Steel.	Iron.
2¾ to 5 inches	57½	47½
1¾ to 2½ inches	50	40
1 to 1½ inches	35	30
6 inches and larger	52½	45

Steel Billets.—Considerable inquiry is reported for small quantities, and one large consumer is in the market for 10,000 tons for the first quarter of next year. The local Steel manufacturers are finishing their entire Steel output, and the merchant trade will have to be supplied from outside works.

Rails and Track Supplies.—The tonnage of Heavy Rails now being entered continues quite large. Inquiries for large quantities are being received, which manufacturers are unable to consider, as they cannot make the desired deliveries. Heavy Sections are quoted at $28. The demand for Light Rails has seldom been stronger. The local mills are sold well into next year, and other makers doing business in this market are likewise finding their capacity so rapidly being taken up that they are 60 to 90 days behind on shipments. Prices of Light Rails run from $30 for 45-lb. Rails up to considerably higher figures for Small Sections, depending entirely on conditions. Large sales are being made of Spikes and Bolts. Track Fastenings are quoted as follows: Splice Bars, 1.65c. to 1.75c.; Spikes, 2c. to 2.10c.; Track Bolts, with Hexagon Nuts, 2.90c. to 2.95c.; Square Nuts, 2.75c. to 2.80c.

Merchant Steel.—Unsolicited business covering good quantities is being received by sales agents. Consumers are thus shown to be in further need of material and to have no apprehension as to the maintenance of prices. Mill shipments, Chicago, are quoted as follows: Smooth Finished Machinery Steel, 2c. to 2.10c.; Smooth Finished Tire, 1.85c. to 2c.; Open Hearth Spring Steel, 2.30c. to 2.40c.; Toe Calk, 2.40c. to 2.60c.; Sleigh Shoe, 1.85c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 55 off. Ordinary grades of Crucible Tool Steel are quoted at 6¾c. for carloads and 7c. to 7½c. from store; Specials, 12c. upward.

Old Material.—While some quotations have been revised by marking them slightly higher, the general tendency is toward lower figures. Heavy offerings of certain classes of material are being made by holders, and the largest buyers are now limiting their purchases as much as possible, awaiting a lower level of values. The demand for Melting Scrap has been somewhat better. Cast Scrap is in but little demand. The following are approximate quotations per gross ton:

Old Iron Rails	$21.00 to $21.50
Old Steel Rails, mixed lengths	14.00 to 14.50
Old Steel Rails, long lengths	18.00 to 18.50
Heavy Relaying Rails	25.50 to 26.00
Old Car Wheels	16.00 to 16.50
Heavy Melting Steel Scrap	13.50 to 14.00
Mixed Steel	10.50 to 11.00

The following quotations are per net ton:

Iron Fish Plates	$18.00 to $18.50
Iron Car Axles	21.50 to 22.00
Steel Car Axles	16.50 to 17.00
No. 1 Railroad Wrought	16.00 to 17.00
No. 2 Railroad Wrought	14.00 to 14.50
Shafting	16.50 to 17.00
No. 1 Dealers' Forge	13.00 to 13.50

No. 1 Busheling and Wrought Pipe	12.25 to	12.75
Iron Axle Turnings	11.25 to	11.75
Soft Steel Axle Turnings	11.00 to	11.25
Machine Shop Turnings	11.00 to	11.25
Cast Borings	5.00 to	5.25
Mixed Borings, &c	5.25 to	5.50
No. 1 Boilers, cut	11.50 to	12.00
No. 2 Boilers, cut	9.50 to	10.00
Heavy Cast Scrap	11.25 to	11.75
Stove Plate and Light Cast Scrap	8.50 to	9.00
Railroad Malleable	12.00 to	12.50
Agricultural Malleable	11.00 to	11.50

Metals.—The statement is made that the stocks of Copper at Lake Superior shipping points are much less than usual near the close of navigation. It is therefore claimed that prices can easily be maintained at the present level. Carload lots of Lake are quoted at 17c. and Casting brands at 16½c. Pig Lead stands steadily at 4.32½c. for Desilverized and 4.42½c. for Corroding, in 50-ton lots. Dealers continue to quote selling prices on small lots of Old Metals as follows: Copper Wire and Heavy, 15c. to 15½c.; Copper Bottoms, 14c.; Pipe Lead, 4.15c.; Zinc, 2.75c.

Coke.—Prices of Standard brands of 72-hour Foundry Connellsville Coke are strong, at $4.75 to $5. Good orders are being placed, but in every case they are taken subject to the ability to secure cars. The scarcity of cars continues to make the supply in this locality so small as to be very embarrassing to many consumers.

Philadelphia.

FORREST BUILDING, October 15, 1901.

Business continues about the same as last week. There is no change in prices, no particular change in the demand, and no material change in the outlook. Pig Iron is probably in as strong position as any article on the list, which was indicated by the publication last week of the monthly report from the furnaces. Stocks decreasing at the rate of 20,000 tons per month with an increased production to a still greater extent, is really a remarkable exhibit, showing as it does an apparent consumption of at least 16,000,000 tons of Pig Iron per annum. This, if continued during the winter months, would be favorable for a splendid start next spring. Unfortunately there is nothing to encourage very sanguine expectations on this point, although there may be the same surprise in store for the trade as there has been in regard to the present year's business. The problem is one that cannot be solved at the present time, but there are elements of uncertainty which even the most pronounced optimists concede to be disconcerting. It is not desirable to be persistent in calling attention to the weak points, yet that all the facts should be presented for consideration is only fair. One very important feature, therefore, is becoming more prominent daily—viz., the loss of our export outlet for both raw and manufactured Iron and Steel. It may be recovered, but certainly not at anything near the prices now ruling. Canada is throwing into the British and Continental markets a very considerable tonnage, and that tonnage is bound to be much larger in the near future, while the prices are such that until Canadian order books are full there will be little or no chance for American Iron. It becomes a question, therefore, whether our home consumption will be able to carry a production of 16,000,000 or 17,000,000 tons of Pig Iron, or whether prices will have to be dropped until some of the weaker furnaces are forced out of the market. This will no doubt be the final outcome, but while it may be delayed for a time it must come eventually. Other features are developing slowly, but they are not without significance. The demand for Plates, for instance, is not near as active as it has been all through the year until very recently. This would seem to indicate that the shortage made by the strike is responsible for the continued activity in other lines, and that when they catch up, all departments will be in a position to accept a great deal of new business. The question is, can it be had in sufficient volume to make steady prices? The shipyards are not taking in much new business, the bridge and locomotive works are doing well, but the smaller consumers have not as much work in prospect as they have had during the past two or three years. The boom in the shipping trade—particularly in Europe—has been magnificent. Old vessels have been discarded, and new ones of large capacity and of the most approved designs have taken their place, and it is said that in many cases they have already paid for themselves. The extremely low rates of freight, compared with those realized during the past three or four years, indicate an approaching oversupply of tonnage, however; consequently the shipyards are hardly likely to have much new business unless the passage of the Subsidy bill helps them out. These, with other features which are not helpful to the market, are conducive to extremely conservative operations, so that until there are some fairly safe indications that present conditions can be maintained, contracts for long deliveries are not likely to be general, nor on a large scale.

Pig Iron.—The market holds its own very satisfactorily. Sales have been at a fair average of prices compared with those of the past two or three weeks, but it cannot be claimed that the upward tendency has made much headway. On the contrary a great deal of business has been accepted at fractionally lower figures than sellers were willing to accept two or three weeks ago, and orders can still be placed on equally good terms. It should not be understood that the market is either weak or lower, but it is distinctly evident that the extreme outside prices are for the best brands only, and for this year's delivery. Makers are so well sold up that there is no need for shading prices at present, but it is a seriously considered question whether or not it should be done on next year's shipments. The matter has not been brought forward prominently so far, as buyers are disposed to let it rest until they can see a little further ahead. Sellers to some extent are taking the same ground, but most, if not all, the business done has been at lower figures than for earlier shipments. The fact of the matter is that no one seems able to diagnose the situation with any great degree of confidence, the immediate conditions being so favorable that it is almost impossible to regard the future pessimistically, yet there are so many uncertainties that equal difficulties are met with in deciding for an optimistic position. Sales are being made for this year's shipments at about $14.50 for No. 2 Plain and $15 for No. 2 X, with occasional sales at 50c. more, the average being probably about $15.25 for the last mentioned grade. Basic Iron has sold in large lots at about $14, delivered to nearby furnaces, the general range for the entire market being about as follows for city and nearby deliveries and from 25c. to 50c. less at points within a radius of 100 miles south or west: No. 1 X Foundry, $15.50 to $16; No. 2 X Foundry, $15 to $15.50; No. 2 Plain, $14.50 to $14.75; Standard Gray Forge, $13.75 to $14; Ordinary Gray Forge, $13.25 to $13.50; Basic (Chilled), about $14; Bessemer, Nominal, at about $14.50.

Billets.—The market is drifting around without finding a safe anchorage. Prices have to be considered in accordance with the requirements in each individual case, quantity, date and point of delivery. The price may be $28, $26, or even $25; it all depends upon circumstances, as there is no Steel offered in the open market. If buyers want it they have to go after it, a condition of affairs which of course is not likely to continue much beyond the present month.

Plates.—The demand is fair, but indications point to the fact that new business is wanted at nearly all the leading mills. There is a considerable tonnage in old orders, which are yet to be completed, but they are gradually being run off, and there is some anxiety to secure new work to replace them. Prospects in this respect are not entirely satisfactory, considering the steadily increasing capacity for production, but the day to day demand, combined with old orders, will keep things going for quite a time before there is any pinch. Some of the expected orders at the shipyards are sufficiently far advanced to make it tolerably certain that they will be closed before the end of the month, but the tonnage is not heavy, possibly 2000 to 3000 tons all told. Prices remain as last quoted—viz., for city and nearby

deliveries: Plates, ¼-inch and thicker, 1.70c. to 1.75c.; Universals, 1.60c. to 1.70c.; Flange, 1.90c. to 2.10c.

Structural Material.—The extreme difficulty in placing orders for prompt deliveries shows very clearly that the mills are greatly oversold. Prices are nominally unchanged, but to secure attention buyers have to bid more money. The minimum rates are as follows for seaborad or nearby deliveries: Angles, 1.75c. to 1.85c.; Beams and Channels, 15-inch and upward, 1.75c. to 1.85c.

Bars.—The Bar situation appears to be very strong, and from the fact that deliveries are slow it is inferred that the mills are all very full of work. Prices are maintained at 1.60c. to 1.65c. as a minimum for carload lots, and Steel Bars at slightly higher figures.

Sheets.—Scarce as hens' teeth, but there is some prospect of relief in course of a few weeks' time. Prices are according to the urgency for deliveries, but nominally they are about as follows for best Sheets (Common Sheets two-tenths less): No. 10, 2.50c.; No. 14, 2.70c.; No. 16, 2.80c. to 2.90c.; Nos. 18-20, 3.40c.; Nos. 21-24, 3.50c.; Nos. 26, 27, 3.65c. to 3.70c.; No. 28, 3.80c. to 4c

Old Material.—The market is easier, and Steel Scrap can be bought at less money than was quoted a week ago. There is a little improvement in Borings, good clean stock having sold at $8 and over that in one or two instances. Bids and offers for deliveries in buyers' yards are as follows: Choice Railroad Scrap, $19.25 to $20; Country Scrap, $15.60 to $17; No. 2 Light (Ordinary), $11.50 to $12.50; No. 2 Light (Forge), $13.75 to $14.25; Machinery Cast, $13.75 to $14.25; Heavy Steel, $17.50 to $18; Old Steel Rails, $17.50 to $18; Old Iron Rails, $19 to $20; Wrought Turnings, $11.75 to $12.50; Cast Borings, $7.50 to $7.75; Old Car Wheels, $16.50 to $17; Iron Axles, $23.50 to $24; Steel Axles, $19 to $20.

Cincinnati.

FIFTH AND MAIN STS., October 16, 1901.—(*By Telegraph*).

The situation in the Pig Iron market is practically unchanged from what it was a week ago. There has been some heavy buying of Forge Iron by parties at quite a distance from this city, though the sales are reported to the agency headquarters here. Most of this Iron has been Southern brands. The main body of the business, however, has been in Foundry Iron, and while there have been no very large contracts closed, yet there has been a very large number of orders, ranging from 700 or 800 tons down. There is still practically but one price for Southern Iron, and that is on the basis of $11, Birmingham, for No. 2. Almost all of the business which is being transacted represents contracts covering the first half of next year. There is a good, strong demand, and in some cases an urgent demand for immediate delivery of Iron, but it is very scarce, and, in fact, almost impossible to secure any of the popular grades for delivery within the next three months. The outlook for the coming week is for a continuation of the present good business, and the whole situation may be classed as excellent. Freight from Birmingham is $2.75 to this point; from Hanging Rock district, $1.10. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	....	to	$14.25
Southern Coke, No. 2	....	to	13.75
Southern Coke, No. 3	....	to	13.25
Southern Coke, No. 4	....	to	12.75
Southern Coke, No. 1 Soft	....	to	14.25
Southern Coke, No. 2 Soft	....	to	13.75
Southern Coke, Gray Forge	....	to	12.75
Southern Coke, Mottled	....	to	12.75
Ohio Silvery, No. 1	$14.60	to	15.00
Ohio Silvery, No. 2	14.10	to	14.60
Lake Superior Coke, No. 1	15.10	to	15.60
Lake Superior Coke, No. 2	14.60	to	15.35
Lake Superior Coke, No. 3	14.10	to	14.85
Southern Basic	....	to	14.75

Car Wheel and Malleable Irons.

Standard Southern Car Wheel, chilling grades	$18.25	to	$18.75
Standard Southern Car Wheel, No. 2	17.25	to	17.75
Lake Superior Car Wheel and Malleable	18.50	to	19.00

Plates and Bars.—The market is very strong and quite active with indications pointing to higher figures after a while. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.65c., with half extras; same, in small lots, 1.85c., with full extras; Steel Bars, in carload lots, contract delivery, 1.62c.; same for prompt delivery, 1.70c. to 1.75c.; Base Angles, in carload lots, 1.80c.; Plates, ¼-inch and heavier, 1.90c. to 2c.; 3-16 inch, 2.10c.; Sheets, No. 16, 2.90c. to 3c.

Old Material.—The situation is unchanged, and on the basis of last week's figures the market is steady. We quote dealers' buying prices, f.o.b. Cincinnati, as follows: No. 1 Wrought Railroad Scrap, per net ton, $14 to $14.50; Cast Railroad and Machine Scrap, $12.25 to $12.75; Iron Axles, $19 to $20; Iron Rails, $17.25 to $18.25; Steel Rails, rolling mill lengths, $14.75 to $15.25; short lengths, $13.75 to $14; Car Wheels, $17 to $17.50. All prices except No. 1 Wrought on the basis of gross tons.

Cleveland.

CLEVELAND, OHIO, October 15, 1901.

Iron Ore.—The Iron Ore carrying trade on the lakes received a serious setback this week by the appearance of a car shortage. The movement from the boats direct to the stock piles of the furnaces has, in some instances, stopped entirely for the better part of a day, an unprecedented condition this year, and at other times the cars have been so scarce that direct movement has been only partially as brisk as it was late in the summer. The shippers have about stopped taking wild boats, finding that it is to be rather a difficult task under prevailing conditions to keep the contract boats going. The rates hold nominally at the old figures, although the market is in such shape that owners would be willing to take less if assured of a dock and even moderate dispatch in unloading. The rates are 90c. from Duluth, 80c. from Marquette, and 60c. from Escanaba.

Pig Iron.—The price of Foundry Iron has climbed a little this week, and $14 is now generally quoted on No. 2 in the Valley. Some reports are abroad of small lots having been taken at $13.75, but if such is the case it is on material which was arranged for a week or more ago, when such a price was generally accepted. All of the sales made recently have been on the higher basis. The sales have been only fairly heavy this week. Deliveries are not promised now until the latter part of December. Southern Irons are getting some foothold in this market by the inability of Valley furnaces to make deliveries. The prices are still quoted at $11, Birmingham, the expected advance not having been recorded. On the Foundry grades some contracts for delivery after the first of the year have been taken by malleable producing concerns. The furnaces in the Bessemer Association have sold up all of the Iron they can possibly produce during November, and deliveries are not now promised before December 1. The buying for next year has not started in as yet.

Finished Material.—Structural Shapes are the feature of the market this week. The Pittsburgh mills are in such position that they are not offering deliveries until the latter part of January. The other Structural producers are in no better condition. The situation is considered stronger since the winter months are the dull season of the year, when most mills are content with orders that will keep them in operation. The market now is very strong at the prevailing prices of 1.70c. for Beams, Channels and Angles. The Rail situation is still very strong and the market shows this week that new orders for future delivery are coming in steadily. Orders are coming in steadily on Bars, and this seems to be one of the strongest factors of the market. The orders are very largely in excess of the production at the mills, and in consequence the possibility of future delivery is constantly being diminished. The prices do not change from 1.55c., Pittsburgh, on Bar Iron, and 1.50c., Pittsburgh, for Bessemer Bar Steel, and 1.60c., Pittsburgh, on Open Hearth. Plates are not quite as strong as the remainder of the market, but some business is showing up which may change the aspect a little. This week one order for about 2000 tons of ship material has been placed, and the reports on the market indicate that from 5000 to 8000 tons are still in sight and might be forthcoming in the near future. The demand for Sheets

keeps up, and the sales have been heavy at old prices.

Old Iron.—The Scrap market is very strong now, being in better shape than at any time for weeks. The sales are quite heavy and the demand seems to be slightly in excess of the available supply. The prices have not changed much, but the market is strong at the old figures. The quotations are as follows: No. 1 Wrought, $16.50, net; Cast Borings, $8, gross; Wrought Turnings, $12.25, gross; Cast Scrap, $13, net; Stove Plate, $10, net; Heavy Steel, $17, gross; Steel Rails, $17, gross; Old Iron Rails, $22, net; Old Steel Axles, $19, gross; Old Car Wheels, $17, gross.

Pittsburgh.

HAMILTON BUILDING, October 16, 1901.—(*By Telegraph.*)

Pig Iron.—The heavy purchases of Bessemer and Basic Iron by the United States Steel Corporation and other large Steel interests have cleaned up the surplus Iron for October and November, and the market is very strong at $15.25, at furnace. It is possible that a few small lots of Bessemer Iron might be picked up from outside parties, say at $15.10, or $15.15 at furnace, but it is not likely that there is more than 5000 tons of this Iron. The market for Mill Iron is very strong, and prices are higher. There have been heavy purchases of Foundry Iron for this quarter, and also for next year, when prices were lower and the market has advanced materially. We quote Bessemer Iron at $15.25 at furnace, or $16, Pittsburgh. As stated this price might be slightly shaded by some of the outside furnaces. Gray Forge Iron is $14.15 to $14.25, Pittsburgh, and is very strong. We quote No. 1 Foundry at $15 to $15.25; No. 2, $14.50 to $14.75, and No. 3, $14 to $14.25, all f.o.b. Pittsburgh. We note sales of some 20,000 to 25,000 tons of Standard Bessemer Iron made last week by the outside furnaces and broker at prices ranging from about $15 to $15.10, Valley furnace. It is hardly likely that large blocks of Bessemer Iron could be bought at these prices to-day, as the market is firmer. We also note purchases in round lots of Bessemer Iron from the Bessemer Furnace Association by the United States Steel Corporation at $15.25, at furnace, or $16, Pittsburgh, for November delivery. We note a sale of 1000 tons of Standard Forge Iron at $14.10, and one of 500 tons at $14.15, Pittsburgh; also a sale of 2000 tons of Standard Northern No. 2 Foundry at $14.50, Pittsburgh. The United States Steel Corporation have closed up the purchase on Tuesday of 38,000 tons of Standard Bessemer Iron from the Bessemer Furnace Association at $15.25 at furnace, and for November shipment.

(*By Mail.*)

The most encouraging reports continue to be received as to the condition of the Iron trade and the outlook for next year. The balance of this year on present basis is assured, for the reason that the mills are practically sold up on all kinds of material, with the possible exception of Plates, Wire and Wire Nails, through December. We are also advised that a good deal of tonnage has been entered for next year, and at very good prices. The finishing mills are much hampered in their operations by the shortness in supply of Steel, and this condition will continue for some little time, until the Steel mills have caught up with back orders. Further purchases of Bessemer and Basic Iron have been made in the week, and the market is strong on the basis of $15.25, at furnace, or $16, Pittsburgh. Steel is somewhat quiet, only small lots being sold, and these bring $26 to $27, at mill. We understand that some consumers are getting Steel on a sliding scale basis, which at present prices of Bessemer Iron net the maker a good deal less than is being charged for prompt Steel. There is no change to note in prices of Finished Material, but the whole market is firm, with the exception of Wire products, which are weak.

Ferromanganese.—We continue to quote German 80 per cent. Ferro, in carloads and larger lots, at $52.50, delivered f.o.b. cars Pittsburgh. Domestic Ferro is held at about $55 a ton.

Muck Bar.—There is some inquiry for Muck Bar and standard grades are held at about $29.50, buyer's mill, Pittsburgh. Possibly for larger tonnage this price might be slightly shaded, but the market is regarded as quite firm.

Rods.—Makers of Rods advise us that the market is stronger than it has been for some time. We quote Bessemer Rods at $32.50 to $33, Pittsburgh, but it is understood some sellers are holding firm for the higher price. There is a heavy demand for Basic Rods and they are almost impossible to obtain at any price, and bring much higher figures than Bessemer.

Plates.—The volume of tonnage in Plates continues light, but in spite of this the mills are holding firm to the agreement on prices. A good deal of tonnage is in sight and will probably be placed before long. The leading Plate mills are comfortably filled, but some of the small concerns have only work ahead for a week or two. We quote: Tank Plate, ¼-inch thick, up to 100 inches in width, 1.60c. at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.80c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price to 3c. Plate more than 100 inches wide, 5c. extra per 100 lbs. Plate 3-16 inch in thickness, $1 extra; gauges Nos. 7 and 8, $3 extra; No. 9, $5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots. Terms, net cash in 30 days.

Structural Material.—The Wabash Railroad bridge, to cross the Monongahela River and run into the new proposed depot in the lower part of the city, is being figured upon and may be placed in a few days. This bridge will require possibly 10,000 tons or more of material. Active work on the Farmers' Deposit Bank has been started and this will take 5000 tons. Other large jobs in the Pittsburgh district are coming up and will be placed before this year is out. The Structural mills are loaded with tonnage for the next two or three months, and will run to utmost capacity right through the winter months. Prices are firm, but not changed. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6 inches, 1.60c.; smaller sizes, 1.55c. to 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.50c., half extras, at mill; Universal and Sheared Plates, 1.60c. All above prices are f.o.b. Pittsburgh.

Bars.—We note a continued heavy demand for both Iron and Steel Bars, and most of the mills are from two to three months behind in orders. While the minimum price of Steel Bars in carloads is 1.50c., yet small lots for prompt shipment are being sold at 1.60c. to 1.65c., and in some cases more is obtained. We quote Steel Bars at 1.50c. in carloads and 1.60c. to 1.65c. in small lots, with $2 advance on open hearth stock and the usual advances for high carbons and miscellaneous shapes. The agreement recently made by the makers of Iron Bars, by which the price of carloads and larger lots was fixed at 1.55c., Pittsburgh, $1 a ton above the price of Steel Bars, is being rigidly held. The mills rolling Iron Bars are full of work and prompt delivery is very hard to obtain. We quote Common Iron Bars at 1.55c., Pittsburgh, half extras. For small lots a considerable advance on this price is charged.

Sheets.—In Sheets it continues to be largely a question of delivery. Demand continues heavy, and some of the Sheet mills are out of the market as sellers for delivery in balance of this year. A good deal of tonnage in Sheets has been sold for next year, and the outlook is that the Sheet mills will have steady work all through the winter months We quote No. 27 Black Sheets, box annealed, one pass through cold rolls, in carload lots and for shipment over balance of this year, at 3.10c. to 3.25c. For small lots of a few bundles and for prompt shipment No. 27 is being sold as high as 3.40c. to 3.50c., and No. 28 as high as 3.50c. to 3.75c. Prices of the American Sheet Steel Company are as follows on lots of 500 bundles or more of Black Sheets, one pass through cold rolls: Nos. 10, 11 and 12, 2.30c.; Nos. 14 and 15, 2.40c.;

Nos. 16 and 17, 2.50c.; Nos. 18, 19, 20 and 21, 2.60c.; Nos. 22, 23 and 24, 2.70c.; Nos. 25 and 26, 2.80c.; No. 27, 2.90c.; No. 28, 3c.; No. 29, 3.15c.; No. 30, 3.25c. On lots less than 500 bundles the American Sheet Steel Company will not make shipments except through jobbers, and for direct shipments from mill in less than carload lots an extra charge of 10c. per 100 lbs. is made. Galvanized Sheets are held at 70, 10 and 5 off in lots of 500 bundles and over, and at 70 and 10 in smaller lots. Outside Sheet mills quote Galvanized at 70 and 10 to 70 and 5 off in carloads for shipment within the next 60 to 90 days. Small lots of Galvanized are held at about 70 off.

Merchant Steel.—The mills advise us that tonnage is very good, and the tone of the market is firm. On some lines higher prices are being asked. We quote: Toe Calk, 1.80c. to 1.85c.; Tire Steel, 1.50c. to 1.60c.; Sleigh Shoe, 1.85c. to 1.90c.; Hammered Lay Steel, 3.75c.; Open Hearth Spring, 2.75c.; Steel Bars, 1.50c. base; Cold Rolled Shafting, 60 per cent. off in carloads and 55 per cent. in less than carloads, delivered to all points east of the Mississippi River; Tool Steel, 6c. and upward, depending on quality, maker's mill.

Skelp.—The supply of Skelp has been considerably increased by the starting up of more mills, but the output is being taken by the Tube mills as fast as made. The market is firm, and we quote Grooved Iron Skelp at 1.95c to 1.97½c., and Sheared at 2c. to 2.05c. Grooved Steel Skelp is 1.85c. to 1.90c., and Sheared 1.90c. to 1.95c. All these prices are f.o.b. maker's mill, less 2 per cent. for cash in 30 days from date of invoice.

Tubular Goods.—Deliveries of Tubes are somewhat better, but certain sizes are still very hard to obtain for prompt shipment. Some of the mills that put their prices away up during the strike have lowered them quite considerably. The leading Tube interest continues to quote to consumers in carload lots for delivery within 60 to 90 days as follows:

Merchant Pipe.

	Per cent. Black.	Per cent. Galvd.
⅛ to ½ inch and 11 to 12 inch	61	48
¾ to 10 inch	68½	56

Casing, Random Lengths.

	S. & S.	I. J.
2 to 3 inch	58	53½
3½ to 4 inch	63	59
4½ to 12½ inch	65	61½

Casing, Cut Lengths.

	S. & S.	I. J.
2 to 3 inch	53½	59
3½ to 4 inch	59	55
4½ to 12½ inch	61½	57½

Boiler Tubes. Up to 22 feet.

Steel.	Per cent.
1 inch to 1⅝ inch and 2¾ inch to 5 inch, inclusive	65½
2 inch to 2½ inch, inclusive	60
6 inch and larger	59
Iron.	
1 inch to 1½ inch and 2½ inch	43½
1⅝ inch to 2¼ inch	43
2¾ inch to 13 inch	53

Jobbers who can ship Pipe out of stock, or within a short time of receipt of order, are able to get much better prices than the above.

Coke.—The output of Coke in the Connellsville region fell off about 10,000 tons last week. This was due partly to the short water supply at some of the works. There is still a car scarcity, and shipments for the week would have been heavier if more cars had been available. It is said the H. C. Frick Coke Company and allied interests are short 300 cars a day. Of the 21,733 ovens in the Connellsville region, 19,473 were active last week and 2260 idle. The output was 218,118 tons, and shipments of 10,900 cars. We continue to quote Connellsville Furnace Coke at $1.75 to $2, and 72-hour Foundry at $2.25 to $2.50; Main Line Furnace Coke is held at $1.65 to $1.75, and Foundry at $1.85 to $2. It is possible some brands of Main Line Furnace Coke, not so favorably known, might be bought at less than prices quoted above.

The partnership of Banning, Cooper & Co., Iron and Steel factors, Lewis Block, Pittsburgh, expired by limitation on October 15. Charles S. Guthrie has retired and Richard Hoffman, Jr., and J. K. Frye have been admitted as partners. No change will be made in the firm name.

St. Louis.

CHEMICAL BUILDING, October 16, 1901.—(*By Telegraph.*)

Pig Iron.—The Pig Iron market is in a state of great activity in keeping with recent conditions. While the tonnage of individual orders is not generally on an unusual scale there has been a marked increase in this direction since our last report. It is said the bulk of the business now being placed is for delivery by the end of the year and some difficulty is being experienced by the furnaces to promptly fill this demand. One of the leading concerns say the figures for one recent day's business footed up 25,000 tons, including one order for 15,000 tons. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry	$14.75 to $15.00
Southern, No. 2 Foundry	14.00 to 14.25
Southern, No. 3 Foundry	13.50 to 13.75
Southern, No. 4 Foundry	13.00 to 13.25
No. 1 Soft	14.50 to 14.75
No. 2 Soft	14.00 to 14.50
Gray Forge	13.00 to 13.25

Bars.—An extraordinary demand is reported in the market for Bars, and the usual request for quick delivery is a difficult problem for the mills to solve. The tonnage booked for delivery between now and January 1 will likely tax the mills greatly to turn out. We quote: Iron Bars, 1.75c. to 1.85c.; Steel Bars, 2c. Jobbers quote Iron Bars, 2.10c. to 2.15c.; Steel, 2.10c. to 2.15c., full extras.

Rails and Track Supplies.—The heavy demand which has been ruling in the Rail department of the market still continues, and it is reported on a broader scale. Track Supplies are still in active demand with no change in prices. We quote: Splice Bars, 1.75c. to 1.95c.; Bolts, with Square Nuts, 2.75c. to 2.90c.; with Hexagon Nuts, 2.90c. to 2.95c.; Spikes, 2c. to 2½c.

Pig Lead.—The Pig Lead condition rules along recent lines with a good demand and no change in prices. Soft Missouri at 4.25c. to 4.25½c., and Chemical at 4.30c. to 4.35c.

Spelter.—A steady and large demand continues in the market for Spelter and prices are advancing with apparently no diminishing of the buying power. We quote 4.10c. bid about the top figures on this move for large transactions.

New York.

NEW YORK, October 16, 1901.

Pig Iron.—With the exception of one transaction, involving about 6000 tons of Iron, no sales of any magnitude are reported in this market. Consumers are testing the market for the first and second quarters of next year, but are apparently unwilling to pay current prices. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, $16 to $17.50; No. 2 X, $14.75 to $15.75; No. 2 Plain, $14 to $14.50; Gray Forge, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $15 to $15.50; No. 2 Foundry, $14.75 to $15; No. 1 Soft, $14.75 to $15; No. 2 Soft, $14.50 to $14.75; No. 3 Foundry, $13.75 to $14; No. 4 Foundry, $13.50 to $13.75; Gray Forge, $13.25 to $13.50.

Cast Iron Pipe.—Quick delivery is generally demanded, and in some cases where it cannot be arranged for purchasers state that the work will be postponed until next spring. Generally speaking, inquiries for small lots are falling off and no large blocks for next year are yet on the market. On a lot of 3070 metric tons for Java, closed at the Hague in the middle of last month, the Friedrich-Wilhelms Huette, Muelheim a R., bid 229,981 florins, against 252,047 florins for the only American bid.

Steel Rails.—The Eastern roads have not yet placed their orders to any extent, however active the Western business may be. An Eastern mill has taken an order for 15,000 tons of Rails for Cuba. We continue to quote $28 at mill for Standard Sections.

Finished Iron and Steel.—New orders for Structural Material have not been large in this territory during the week. The activity in the building of large structures continues, however. We quote as follows at tidewater: Beams, Channels and Zees, 1.75c. to 1.80c.; Angles, 1.75c. to 1.80c.; Tees, 1.80c. to 1.85c.; Bulb Angles and Deck Beams, 2c.; Sheared Steel Plates are 1.80c. to 1.85c. for

Tank, 1.90c. to 1.95c. for Flange, 2c. to 2.05c. for Fire Box. Charcoal Iron Plates are held at 2.25c. for C. H. No. 1, 2.75c. for Flange, and 3.25c. for Fire Box. Refined Bars are 1.60c. to 1.65c.; Soft Steel Bars, 1.62½c. to 1.65c.

Metal Market.

NEW YORK, October 16, 1901.

Pig Tin.—As far as actual consuming business was concerned the market during the last week was very quiet. During the period of the recent declining market most of the large consumers covered their requirements for the balance of this year, and the smaller consumers are as usual buying only what they actually require for the fulfillment of business in hand. The market itself was somewhat firmer, however, owing to the advance of prices in London. Prices at the close to-day were: Spot, 24.85c. to 25c.; November, 24.85c. asked; December, 24½c. asked, and January, 24c. asked.

The London market at the close was £115 for spot and £108 for futures. The discount on futures in London is now over £7. The half monthly shipments from the Straits aggregated 2120 tons, as against 1895 tons for the same period of last year.

Copper.—Lake for spot delivery is now scarce, and consumers find themselves forced to pay 16.85c. to 17c. The first named figure was bid on 'change to-day for a carload lot. It is needless to state that only small lots are changing hands at these figures. The large consumers are of the opinion that the market will certainly not advance, and are getting along with just as small a stock of Copper as possible. Inquiry among some of the largest of these concerns elicited the information that all believe that prices are bound to recede before a great while. Electrolytic and Casting Copper are unchanged, and Electrolytic can be had at prices ranging from 16.30c. to 16⅝c., according to brand. Casting stock is quoted from 15⅝c. to 16⅛c. London has steadily advanced for spot, but futures were more or less neglected, selling at a discount of £1 5s. to-day. Best Selected is unchanged at £72. The London market to-day was quoted at the close £65 5s. for spot and £64 for futures. While the production for September in the United States is about the same as for the corresponding period of last year, that of the reporting mines of Europe it will be noticed has increased from 7839 tons for September of last year to 9479 tons for this year. This is an increase of 20 per cent., and is regarded in the trade as of considerable significance.

Pig Lead.—There is no change in this market. Business is quiet. The American Smelting & Refining Company continue to quote on a basis of 4.37½c. for Desilverized, New York, and 4.32½c., St. Louis. London has further declined, the quotation at the close to-day being £11 7s. 6d.

Spelter—Continues to grow firmer. Consumption throughout the country is reported to be good, and while there may be some manipulating influence behind the present upward movement, there is no disposition shown in any quarter to retard its progress. Producers consider that the price of the metal has been so low during the last two or three years that any advance would be welcome, no matter how it comes. During the early portion of the week under review the price reached as high as 4.25c. to 4.30c., New York, but at the close to-day the quotation was 4.20c. to 4.25c. A report which is creating interest in the trade is to the effect that the Lanyon Zinc Company are building at their Iola plant a large Sheet mill, and will enter the market with Sheet Zinc. It is expected to have the mill turning out its product by the end of this year. The London market is unchanged from last week with £17 2s. 6d.

Antimony—Is unchanged. Hallett's is quoted 8½c.; Cookson's 10¼c. Outside brands are sold 8¼c.

Nickel—Is unchanged, prices continuing on a basis of 60c. for lots not covered by yearly contracts.

Quicksilver.—There is no change. The price quoted is $51 per flask of 76½ lbs., in lots of 50 flasks or more. The London market is unchanged at £9.

Tin Plate.—Announcement was made to-day that the American Tin Plate Company will take orders for the first quarter of next year at unchanged prices. The company are quoting on a basis of $4.19 per box of Standard 100-lb. Cokes, f.o.b. New York, and $4 f.o.b. mill. The London market has scored another decline, closing at 14 shillings 3 pence.

John Stanton reports the Copper production in the United States and of the foregn reporting mines and United States exports as follows, in gross tons of 2240 lbs.:

	Reporting mines.	Outside sources.	Total U.S. product.	Product foreign mines.	U. S. exports.
First half 1895.....	70,612	9,100	79,712	42 484	34,215
Second half 1895...	84,885	6,600	91,485	43 674	30,507
Total 1895.....	155,497	15,700	171,197	86 178	64,722
First half 1896.....	94,180	7,200	101,380	42 255	58,216
Second half 1896...	95,314	7,200	102,514	43 941	67,287
Total 1896.....	190,494	14,400	203,894	86,196	125,503
First half 1897.....	103,651	5,000	108,651	44 263	64,870
Second half 1897...	100,555	6,900	107,455	44 007	64,340
Total 1897.....	204,206	11,900	216,106	88 270	129,210
First half 1898.....	112,687	7,800	120,487	40 880	68,284
Second half 1898...	103,535	10,250	113,785	43,674	76,831
Total 1898.....	216,222	18,050	234,272	84 554	145,115
First half 1899.....	111,987	12,500	124,487	43,629	56,460
Second half 1899...	118,818	18,900	137,719	45,611	63,351
Total 1899.....	230,806	31,400	262,206	89 240	119,811
First half 1900.....	114,177	20,400	134,577	43 153	90,747
Second half 1900...	113,810	20,400	134,104	46 278	69,335
Total 1900.....	227,987	40,800	268,681	89 431	160,082
First half 1901.....	112,794	20,600	133,394	46,847	50,027
July, 1901.....	18,585	3,400	21,985	9,254	6,824
August, 1901.....	19,267	3,400	22,667	8,180	6,840
September, 1901....	18,080	3,500	21,580	9,477	6,419

The Homestead Armor Plate Plant.—PITTSBURGH, PA., October 16, 1901.—(*By Telegraph.*)—Some very extensive improvements and additions to equipment will be made in the armor plate department of the Homestead Steel Works of the Carnegie Steel Company, at Homestead, Pa. The Carnegie Company claim that about $4,000,000 have been expended in this armor plate department, and it is the intention to practically duplicate the present plant. Included in the new equipment to be added is another 12,000-ton hydraulic forging press and heating furnaces. The present capacity of the armor plate department is 300 tons a day, but this will be increased to 500 tons a day. Plans are now being drawn for the new additions and equipment, and active work will be started in a very short time.

The Wellsville Sheet Mill.—PITTSBURGH, PA., October 16, 1901.—(*By Telegraph.*)—The Wellsville Works of the American Sheet Steel Company, at Wellsville, Ohio, which now contains six mills, will be increased to a ten-mill plant. It is possible that in the spring six more mills may be added to these works, making it a 16-mill plant.

A New Shipyard.—Another large shipyard is projected on Lake Michigan. Ground has been purchased for the purpose near St. Joseph, Mich. The land lies along the Indiana, Illinois & Iowa Railroad tracks. A dry dock is contemplated in connection with the yard, to be of a size to accommodate the largest vessels.

The New Castle Forge & Bolt Company have been organized at New Castle, Pa., and will build a plant in that city for the manufacture of bolts, nuts and chain. Possibly a forging plant may be added later.

The Washington Charcoal Iron Tin mills, who have a tin plate plant at Washington, Pa., have given an order to the Mesta Machine Company of Pittsburgh for a Mesta pickling machine. The fifth mill in the tin plate plant of this concern will be put in operation soon.

Charles A. Painter, formerly of the American Steel Hoop Company, has sold his seat in the Pittsburgh Stock Exchange.

The Sheffield Rolling Mill Company of Sheffield, Ala., have resumed work, after expending $25,000 in putting in machinery for the manufacture of steel hoops and cotton ties. The mill is now running on barrel hoops and railroad spikes.

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING OCTOBER 16, 1901.

Cap'l Issued.		Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.	Closing quotations.	Sales.
$10,000,000	Am. Bicycle Co., Com.....	.....	.....	.....	.....	.....	.....	...	.....
20,000,000	Am. Bicycle Co., Pref.....	.....	.....	.....	.....	.....	.....	...	.....
10,000,000	Am. Bicycle Co., Bonds....	.....	.....	.....	.....	.....	.....	...	.....
29,000,000	Am. Car & Foundry, Com..	25 -25½¶	25⅛-25¾	25⅝-25¾	25¼-25¾	25½-26	-25½	25½	5,900
29,000,000	Am. Car & F'ndry, Pref.§..	81 -81¼¶	-81	.....	80½-81	80¾-81	-80½	80⅓	1,150
	Am. Locomotive, Pref.....	85 -85⅝	85½-85¾	.....	84⅝-85¼	84⅛-84⅞	-84½	84½	4,000
15,000,000	Bethlehem Steel‡‡.....	.....	.....	.....	.....	.....	.....	...	.....
7,974,550	Cambria Iron, Phila.*.....	.....	.....	.....	.....	.....	.....	...	.....
45,000,000	Cambria Steel*.....	25⅝-26	26 -26¼	26 -26¼	25⅞-26¼	26 -26¼	.....	...	10,289
23,000,000	Colorado Fuel & Iron.....	92 -93½	91 -93¼	92⅝-93	92¾-93	93 -93⅛	-92	92	8,220
24,410,900	Crucible Steel, Com.....	.....	.....	.....	.....	.....	.....	...	.....
24,399,500	Crucible Steel, Pref.....	.....	.....	.....	.....	.....	.....	...	.....
1,975,000	Diamond State Steel‖§§...	- 2¾	.....	.....	.....	- 2¾	.....	...	150
15,000,000	International Pump, Com..	44¾-46	46½-46⅞	-47	-47	46½-47	46½-47	47	2,400
8,850,000	International Pump, Pref..	.....	.....	-88	.....	-88	.....	...	.....
11,000,000	International Silver.....	- 6¾	.....	.....	.....	- 6¾	- 6¾	6¾	.....
10,750,000	Penna., new, Com., Phila..	-44	.....	.....	.....	.....	.....	...	100
16,500,000	Penna., new, Pref., Phila.§.	86 -87	87¾-89	89 -89½	.....	.....	.....	...	1,500
12,500,000	Pressed Steel, Com.....	38½-38¾	39¼-39⅞	39⅛-39½	-39¾	.....	40 -41	41	1,700
12,500,000	Pressed Steel, Pref.....	78¼-79¾	78½-79	.....	.....	79¼-79⅞	80 -81	81	1,900
27,191,000	Repub. Iron & Steel, Com..	14½-14¾	14¾-15⅝	15⅛-15⅝	15 -15½	15 -15⅝	15 -15⅝	15	5,900
20,306,900	Repub. Iron & Steel, Pref..	65 -66	66¼-67	66 -67	65½-66¼	66 -67	.....	...	3,500
7,500,000	Sloss-Sheffield S. & I., Com.	.....	.....	.....	-89½	.....	.....	...	.....
6,700,000	Sloss-Sheffield S. & I., Pref.§.	.....	.....	.....	.....	.....	.....	...	.....
20,000,000	Tennessee Coal & Iron....	58¾-61	60½-61½	60¼-60⅞	59¾-61½	60½-62	-61	61	9,700
1,500,000	Tidewater Steel‖.....	- 6¼	6⅜- 6½	- 6⅜	.....	6½- 6¾	.....	...	900
510,361,300	U. S. Steel Co., Com.‖...	42⅝-43⅜	43¼-43⅝	43 -43⅜	42⅝-43⅜	43¼-44	43 -43⅜	43⅛	93,200
508,511,200	U. S. Steel Co., Pref.‖...	93 -93⅜	93⅝-94	93⅞-94⅛	93¾-94⅝	92⅝-93¼¶	92¼-92⅝	92¼	54,225
1,500,000	Warwick I. & S.‖.....	.....	- 6¾	.....	- 7	.....	.....	...	500

Preferred stocks 7 % cumulative unless otherwise stated. § 7 % Non-Cu. §§ New stock. ‖ Par $10. ‡‡ Par $50, $1 paid in. ‖ Authorized Capital $550,000,000 Common; $535,000,000 Preferred; * Par $50. † 6 % guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph. ¶ Ex-dividend.

Bonded Indebtedness: American Bicycle Co., $10,000,000 sinking fund gold debentures 5 %; Cambria Iron Co., guaranteed 4 % per annum on $50 par by Cambria Steel Co.; Cambria Iron Co., $218,000 6 % debenture 20-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Diamond State Steel Co., property leased from Diamond State Steel Co. at 4 % on $1,000,000, $7 50 on Steel stock paid in, total capital $2,000,000; International Pump: Blake & Knowles S. P. Co $1,000,000 6 %; Tennessee C., I. & R. R. Co., $8,000,000 5 %, $8,867,000 6 %, $1,114,000 7 %, $1,000,000 7 % cu. pref.; Pennsylvania Steel, $1,000,000 5 % Steelton 1st, 1917, $2,000,000 5 % Sparrow's Point 1st, 1922, $4,000,000 consolidated, both plants; Bethlehem Iron, $1,351,000 5 % maturing 1907, interest and principal guaranteed by Bethlehem Steel Co.; Republic Iron & Steel, none; Warwick Iron & Steel, none; Colorado Fuel & Iron Co., Col Fuel Co. Gen. Mort. 6 % $890,000, Col. Coal & Iron Con. Mort., 6 % $2,411,000, Col. Fuel & Iron Gen. Mort. 5 % $2,674,000, also outstanding $1,000,000 preferred stock; Sloss-Sheffield St. & I. Co., Sloss I. & S. first mortgage 6 %, $2,000,000, Sloss I. & S. general mortgage 4½ % $2,000,000. U. S. Steel Corporation $304,000,000 5 % gold bonds, also Am. S. & W. Co. $130,656, Federal Steel Co. $9,822,000 Illinois 5 %, $7,417,000 E. J. & E. R. R. 5 %, $1,600,000 Johnson 6 %, $6,732,000 D. & I. R. R. R. 5 %, $1,000,000 2d D. & I. R. R. R. 6 %, $10,000 land grant D. & I. R. R. R. 5 %; National Steel $2,561,000 6 %.

Iron and Industrial Stocks.

The opinion is prevalent in Wall Street that the developments in the copper stocks have not been without their serious effect upon industrials generally, the steel shares suffering more or less according to their character. There has been rather more difficulty in arranging for loans on collateral of this kind. The week has been characterized by a moderate decline, followed by a rally which has carried values back.

	Bid.	Asked.
American Can Company, common	20¼	20½
American Can Company, preferred	68	69¼
Cramp's Shipyard stock	74	...
Dominion I. & S. Company	22½	...
Empire I. & S., common	3	6
Empire I. & S. preferred	35	40
National Enam. & St., common	27	28
National Enam. & St., preferred	82	85
Otis Elevator, common	31	33
Otis Elevator, preferred	93	96
Va. C. I. & C., stock	7	8
Va. C. I. & C., bonds	42	44
H. R. Worthington, preferred	121	...

The Westinghouse Air Brake Company of Pittsburgh made a net income of $2,981,342 for the late fiscal year, and $3,519,199 for the 1900 period. The company reduced their dividends this year and showed a surplus of $189,092, as against $234,199 for last year.

The directors of the American Bicycle Company at a recent meeting resolved to recommend to the stockholders a reduction in the authorized capital stock of the company, amounting to $80,000,000, to $26,996,400, divided into $9,294,900 7 per cent. cumulative preferred stock and $17,701,500 common stock. It is recommended that $705,100 preferred stock and $2,298,500 common stock now owned by the corporation be retired. A special meeting of the stockholders will be held in Jersey City, October 30, at 12 o'clock, to act upon the above resolution.

Dividends.—The Pennsylvania Steel Company have declared a semiannual dividend of 3½ per cent. on the preferred stock, payable November 1.

The International Steam Pump Company have declared a regular quarterly dividend of 1½ per cent. on the preferred stock, payable November 1, 1901. The transfer books of the preferred stock will close October 19 and reopen November 2.

Henry R. Worthington, Incorporated, have declared a regular semiannual dividend of 3½ per cent on the preferred stock, payable November 1, 1901. The transfer books of the preferred stock will close October 19 and reopen November 2.

The Tennessee Coal, Iron & Railroad Company have declared the regular quarterly dividend of 2 per cent. on their preferred stock, payable November 1. Books close October 21 and reopen November 2.

The Tidewater Steel Company.—CHESTER, PA., October 15, 1901.—During the past few days there has been a report that the Tidewater Steel Company contemplate making improvements to their works in this city. These are to include three furnaces, which will be erected in the open hearth department. One of the other improvements to be made, and on which work will start in a few days, is the placing of a new girder roof, over the outside shipping shed. The largest improvement which is talked of is the erection of a large and fully equipped rolling mill. At the present time, and a fact which leads to the belief that there is good foundation to the rumor, the company find it necessary to procure material for their plate mills from outside concerns, one of which is the Diamond State Steel Company of Wilmington, Del., and other steel industries located up the State. On Thursday last several directors and stockholders of the corporation visited the works, under the guidance of President C. E. Stafford. The gentlemen included Solis and George McCall, directors, and Messrs. Schoen, Lowth, Judge Bartley, Dr. Jamison, Mr. Harvey and R. W. Davenport, formerly connected with the Bethlehem Iron Company.

The Crane Iron Company of Catasauqua, Pa., are blowing in another furnace.

The New York Machinery Market.

NEW YORK, October 16, 1901.

In all branches of the trade there has been a slight improvement shown. Many merchants and manufacturers who a week ago made no effort to conceal a little nervousness over the situation have during the last few days been reconciled by a fresh impetus in general demand. Orders, although not especially large, have been more numerous and inquiries in all branches continue to increase in volume. Prices, too, have been steadier in every line, and the opinion which a week ago many held who feared that the trade was entering another period of concessions has at least received a temporary check. Those who follow the market carefully declare that in ordinary times business comes in "fits and starts." This week saw a starting of a new fit of activity. The lack of individual contracts of great volume is not deplored in the trade, as a shop full of small contracts is generally considered more profitable than the great big orders that fill up the works to the exclusion of the regular run of work.

Machine Tools.

In the heavy sizes business continues unabated. Deliveries are becoming more distant and the tone of the market as regards this branch is very firm. In the medium and smaller sizes a fairly steady volume of small orders maintains a wholesome condition of trade. There is a great deal of expansion of factory capacity going on among prominent concerns in this section of the country. Consequently demand runs chiefly in the direction of the better classes of tools. No changes in prices of importance are reported.

One of the largest orders placed during the week called for 15 Acme screw machines. It was awarded by a builder of hardware specialties to the Prentiss Tool & Supply Company.

The Elliott & Hatch Book Typewriter Company of 256 Broadway, New York, have just purchased a fair sized equipment of machine tools. The additional equipment includes milling machines, lathes, automatic screw machines and other fine machine tools. The machinery is to be installed in a new addition which it has been found necessary to build to the present plant. M. C. Beard is the company's purchasing agent.

Shortly after the destruction of the plant of the Fifield Tool Company of Lowell, Mass., by fire several months ago it was generally reported in the trade that the work would not be rebuilt and that this well-known concern would pass out of existence. We have just been officially advised that this is not to be the case. All the property, both real and personal, we are informed, remaining of the Fifield Tool Company plant was sold by the assignees on the 8th inst. to George W. Fifield, who will immediately rebuild on a larger scale and continue the manufacture of lathes as built by the Fifield Tool Company. The new company will not, however, build any sizes below 24 inch, and will build up to 96 inch. The new works are to be built at once. They will be equipped with the latest types of modern machinery and appliances, as the object of Mr. Fifield is to erect one of the finest machine tool plants in America.

The following information, which is sent us by Charles Miller, who is doing a great deal to advance the interest of Franklin, Pa., will be of general interest to the machinery trade: "The Colburn Tool Company, formerly of Toledo, Ohio, are preparing to build a plant in Franklin for the manufacture of all kinds of small machinists' tools. They have secured a piece of property located on Buffalo and Third streets, 300 x 542 feet, which will be located on the tracks of the L. S. & M. S. Railway. Contract for the construction material has been closed, and work will be commenced upon the buildings as soon as the material can be delivered."

We are informed by the Baker & Shevlin Company, manufacturers of pulp and paper mill machinery, at Saratoga Springs, N. Y., that they are erecting a new plant, consisting of the following buildings: Machine shop, 350 x 75 feet; engine and boiler room, 50 x 100 feet; blacksmith shop, 40 x 100 feet; foundry, 85 x 200 feet; pattern storage, 50 x 100 feet. All to be of brick and iron construction, slate roofs, modern buildings.

Boilers and Engines.

A prominent feature of business in these lines at present is that the character of the inquiries received has improved somewhat. For some time past the chief difficulty has been to secure a final closing of propositions. Inquiries were numerous, but the projectors lacked the confidence to close, and salesmen had to cope with prolonged procrastination. It is now reported that inquiries are more apt to mean immediate business, and, while it may take a few days or possibly weeks to effect a final closing, this is due to ordinary business bickerings, and not because of lack of determination to proceed on the part of the purchaser. The natural result is that orders are more numerous. In the matter of small and medium sized electric lighting and railway plants there is a rather brisk demand at this time. Large enterprises of this type are not so much in evidence. The demand for new power generating apparatus for industrial establishments is said to be very good. While orders for smaller units are more numerous, there is also a good volume in medium sized and fairly large plants. The demand for the latter classes is occasioned by the concentration of numerous plants at large works into new central stations. A notable instance of this kind is now before the trade. The West Virginia Pulp & Paper Company of 309 Broadway, N. Y., are consolidating five scattered boiler and engine houses at their Piedmont, W. Va., plant into one large station. The order for the boilers has just been awarded to the Edgemoor Iron Works. The new plant is eventually to be of 6000 horse-power capacity, but the present order called for but little more than half of this amount. The boilers ordered are of the water tube type, while those to be replaced are return tubulars. Engines are yet to be ordered. This matter, it is expected, will come up in about two weeks, when John G. Luke, the president of the company, returns to the New York office from the South. It is also contemplated to equip a thoroughly modern new mill for the production of coated paper. This concern are continually enlarging their various plants.

One of the largest orders placed during the week was for five engines, aggregating 2200 horse-power. It was awarded to Hoovens, Owens & Rentschler of 39 and 41 Cortlandt street by the Jackson Iron & Tin Plate Company of Clarksburg, W. Va. This company are erecting an entire new plant, and are purchasing a considerable quantity of mill machinery. McNall boilers have been ordered.

Joseph H. Wallace, whose office is located in the Temple Court, 9 Beekman street, N. Y., has placed substantially all of the contracts for the equipment of the Spanish River Pulp & Paper Company's new plant, at Webbwood, Ont. These purchases have aggregated $225,000. There still remains to be ordered an electric generating set.

Miscellaneous.

A short time ago mention was made in this column of a new enterprise, whose object it was to build a large refining plant at Carteret, N. J. The De Lamar Copper Refining Works were referred to. This concern have now established headquarters at Carteret. H. A. Prosser is the manager of the company and has associated with him W. E. Tobey, consulting engineer, formerly of 60 Liberty street. We understand that plans for the new plant are being perfected and that the preliminary work is progressing rapidly.

The Almada Sugar Refineries Company of New York City, who recently incorporated with a capital of $3,500,000, to operate in Mexico, advise us that they will not be ready for two or three months to purchase the equipment for this plant. The directors are Jorge E. Almada and Jesus Almada of Navototo, Mexico; E. J. Johnson of Twinsburg, Ohio; Santiago Smithers, George Nordenholt and Charles W. Mackey of New York City, and G. V. A. Conger of Belleville, N. J. The company's address for the present is care of Santiago Smithers, 215 Broadway, New York City.

Several weeks ago we referred to the purchase of machinery for the equipment of the new plant of the Porto Rico Sugar Company, more accurately termed the Guanica Centrale. Hugh Kelly of 71 Wall street, who has been conducting the purchasing, reports to us that he has bought almost all of the equipment required. There still remain to be purchased a few minor accessories. The new plant is to be located at Guanica, Porto Rico. It is to have a capacity of 1600 tons daily. The 300 horse-power boilers and furnaces have been secured from the Sterling Company of 26 Cortlandt street. The orders for the engines, mills and crushers were awarded to the Farrel Foundry & Machine Company of Ansonia, Conn. The evaporating plant will consist of a Lillie quadruple effect of 400,000 gallons capacity, purchased from the Sugar Apparatus Mfg. Company of Philadelphia. The crystallizers were obtained from the Maschinenfabrik Grevenbroich. The mechanical filters will be built by the same concern. The American Tool & Machine Company of Boston have secured the order for the centrifugals. The Chattanooga Car & Foundry Company of Chattanooga, Tenn., have the order for the railway cars. Percival R. Moses of 33 Nassau street will place the orders for the electrical apparatus required in the project. The machinery is to be operated electrically as far as feasible.

Builders of elevating and conveying machinery, as well as engine and boiler builders, are receiving inquiries from the Buffalo Cereal Company, who are awarding contracts for the erection of new cereal mills and an 80,000-bushel grain elevator. Besides the elevator, machinery and power plant, there is to be considerable heating and drying apparatus, including heating coils, fans and blowers. The works are to cost $100,000. The order for the buildings has been awarded to Chas. Berricks Sons of Buffalo.

It is reported in the trade that the Shaw Electric Crane Company of Muskegon, Mich., are about to build an extensive addition to their works. The plans, it is said, are being prepared by J. H. Daverman & Son of Grand Rapids, Mich.

The order for the two 1000 horse-power engines to be installed by the American Sugar Refining Company at their Brooklyn, N. Y., plant was awarded to the Providence Engineering Works of Providence, R. I. The engines will be of the Rice-Sargent, cross compound condensing type.

The London office of the Buffalo Forge Company recently opened at 39 Victoria street, London, S. W., under the management of D. W. Roper, has closed an important contract in connection with the new plant of the British Westinghouse Electric & Mfg. Company, at Old Trafford Park, Manchester, England. This contract is for apparatus to be used for heating and ventilating the machine shop, foundry stores, the carpenters' shop and box factory of the Westinghouse Company. The machine shop building is 900 feet long, 420 feet wide and 59 feet high. To accomplish the heating and ventilating of this area eight steel plate fans, each one capable of delivering 60,000 cubic feet of air per minute, and driven by a separate induction motor, will be provided; also a separate heater for each fan, a total of more than 10 miles of 1-inch pipe being used.

The Hazelton Boiler Company, formerly of 120-122 Liberty street, New York, have just removed their main office to the works at Rutherford, N. J. Rutherford is only 9 miles from New York on the Erie Railroad with satisfactory railroad service during the day.

Catalogues Wanted.—Hill, Clarke & Co., Chicago, desire catalogues from all machinery manufacturers and kindred lines. Address Publication Department.

F. E. Bachman, general superintendent Buffalo Union Furnace Company of Buffalo, N. Y., has tendered his resignation, taking effect on the appointment of his successor, who has not been appointed.

PERSONAL.

H. B. Guthrie, formerly district sales agent of the American Steel Hoop Company at Pittsburgh, has been elected a member of the New York Stock Exchange. Mr. Guthrie will be located in the Empire Building, New York.

An English journal reports that F. C. Roberts of Philadelphia is expected in England to advise on the remodeling of the Consett Iron Works.

The tube works to be built at Sault Ste. Marie, Ontario, are to be under the management of W. J. Waddle, recently of the Mannesmann Tube Works, Landore, Wales.

A cable dispatch from St. Petersburg says that Major General Retink, manager of the Baltic Shipyards, is coming to the United States to study the American steel industry.

H. T. Gause has resigned the presidency of the Harlan & Hollingsworth Company of Wilmington, Del.

W. E. Berg, mechanical engineer of the Homestead Steel Works of the Carnegie Steel Company, has returned from Europe.

F. H. Hoffstot, president of the Pressed Steel Car Company of Pittsburgh, will in the future make his residence in New York City.

Andrew Carnegie has been unanimously invited to become Lord Rector of St. Andrew's University in Scotland in succession to Prof. James Stewart, whose term expires in November.

Charles T. Schoen, some time president of the Pressed Steel Car Company, has been elected a director of the Tidewater Steel Company.

Harvey A. Higgins, general manager of the Standard Tool Company of Cleveland, Ohio, has returned from a five months' trip through Europe.

Francis H. Weston, president of the Keystone Drop Forge Company, Philadelphia, Pa., has returned from a several months' trip abroad.

Ralph P. Zint has been appointed assistant general sales agent of the Republic Iron & Steel Company, Chicago. Mr. Zint has for some time been performing such duties, and the past week received official recognition.

Guy R. Johnson, who was successively connected with the Ohio Steel Company and the Duquesne works of the Carnegie Steel Company, has just been appointed furnace superintendent of the Sharon Steel Company of Sharon, Pa.

Alfred E. Wells, managing director of the Imperial Steel Works, at Sheffield, England, was a visitor in Chester, Pa., on Thursday last, and inspected the American, Seaboard & Penn Steel Casting plants.

Prof. R. A. Smart has resigned his position in the department of experimental engineering of Purdue University, at Lafayette, Ind., and connected himself with B. F. Sturtevant Company of Boston, Mass., with whom he will become the head of a department of experimental engineering which is being established for the purpose of investigating all problems relating to blower practice and of developing new and more efficient applications of the fan blower in all lines of industry.

Besides the election of Geo. F. Baer to the board of the Pennsylvania Steel Company in the place of John Lowber Welsh, there have been elected to the board Theodore N. Ely, superintendent of motive power of the Pennsylvania Railroad; F. C. Smink, vice-president and general manager of the Philadelphia & Reading Coal & Iron Company, both being included in the Executive Committee. They, together with Frank J. Firth, president of the Erie & Western Transportation Company, were recently elected to the board of the Cambria Steel Company as the Pennsylvania Railroad representatives in addition to Effingham B. Morris. Mr. Firth will also be added to the Pennsylvania Steel Executive Committee. Mr. Morris will now be at the head of the Executive Committees of both the Pennsylvania Steel and Cambria Steel companies.

HARDWARE.

REDUCING COSTS.

One secret of the industrial progress which is being made by this country and the success which attends its efforts to market its products abroad is found in the unremitting pains and marvelous ingenuity which are put forth to reduce the cost of manufacture wherever it is feasible, no matter how insignificant the saving thus effected. An illustration of this is given in connection with the management of the plant of one of the great consolidations who make it a constant study to reduce in every possible way the cost of turning out their product, watching with scrupulous care every detail of manufacture. The manager of the mill observed that in the course of manufacture a certain line of goods were laid down again several times, involving obviously the necessity of taking them up again. To this evident waste of labor the attention of the men in charge was called that they might study on the question as to the way in which it could be avoided. As a result of this a number of bright practical men are grappling with the problem thus presented. It is not to be supposed that it will be found feasible to do away altogether with waste of this character, but some modifications of method have been already adopted which will result in slightly diminished costs. The same principle might doubtless with advantage be considered carefully and in a practical manner by many manufacturers.

A similar economy might be practiced in many a manufacturing or mercantile office in connection with the conduct of the business. Some may be surprised to know that a great corporation, whose profits under existing circumstances are very large and who are abundantly able to be extravagant, should practice careful economy in every department. Not long since on looking over the clerical force in a certain city where 10 or 12 men were employed it was decided that one of them could be spared, the remainder being sufficient to take care of the work of the office. Accordingly the manager said he was given the unpleasant task of telling one of the clerks, a very satisfactory and observing young man, that his services were no longer needed. He was dismissed with a month's pay in advance to give him an opportunity of looking up another place. In this way a permanent saving of more than $60 a month was effected, with, at the same time, an improvement in the efficiency of the whole force.

Bearing on this subject is the recent remark of a prominent and successful merchant that there is more need and more opportunity for bright and able men now than ever before in his experience. They must be of such a make up that they fall in with the changing conditions and movements, and are able to think out new lines of work or to direct with special efficiency, so that labor is minimized and the greatest results obtained at the smallest expense.

THE CLEVELAND MEETING.

The unusual significance of the meeting last week in Cleveland is the justification for the amount of space devoted to it. The gathering was a thoroughly representative one of both jobbing and manufacturing interests. Questions of recognized importance were discussed, and the views expressed by the manufacturers who presented papers will command the attention of the trade.

The National Hardware Association is giving evidence of its strength and exerting large influence in the trade. It is to be congratulated that it enters on another year of its existence under the leadership of R. A. Kirk, who is known as a merchant of wide experience and exceptional ability. The gentlemen associated with him in the direction of the affairs of the association are also thoroughly representative merchants of recognized position. The association is thus insured a wise and efficient administration.

Of special significance was the formation of the Manufacturers' Association. This project has often been considered, but until now no steps have been taken looking to concerted action in this direction. The movement starts in under most favorable auspices, and there will unquestionably be a large accession to the membership of the association. It promises to exert a wide influence and to be a source of benefit to manufacturers and the trade in general.

Condition of Trade.

The business situation shows but little change from week to week. There is a steady business being done by the retail trade, and this is a good indication of the general condition, for when trade is satisfactory with this class of merchants it indicates a healthful state in genral. With the coming of fall weather there is throughout the country a quickening in the demand for fall and winter goods, and jobbers report a very satisfactory activity in these lines, but with difficulty in having their wants adequately supplied, as there is more or less scarcity in many directions. The pressure, however, is relaxing on many kinds of heavy goods, especially those the production of which was interfered with by the strike. The market has witnessed but little change in prices within a few weeks except in special instances where combinations for one reason or another have come to grief. While values, as a rule, are steady, and merchants are buying in such quantities as their trade requires, they are not disposed to speculate, anticipating that goods are not likely to be materially higher. Most merchants are conducting their business with enterprise, but still conservatism, on the theory that present conditions, without important change, are likely to continue into the new year. They do not find justification for buying in excess of their wants for the near future, but place orders to this extent with confidence. This view of the situation it will be recalled was taken by the gentlemen who discussed the subject before the National Hardware Association in the able papers presented in our last issue. The jobbers being, as a rule, pretty well supplied with goods, the demands which are being made by them upon the manufacturers are not especially heavy, but stocks in manufacturers' hands also are light and broken, and in many kinds of goods the makers are still behind their orders. Export business continues without material change in volume, or the character of goods going abroad. There is, however, some falling off, as the makers are feeling the effects of lower foreign prices. The business in specialties, many of which and in considerable quantities go abroad, continues to increase.

Chicago.

(By Telegraph.)

The very heavy pressure under which the Shelf Hardware jobbers so long labored has been relieved to some extent. They report, however, that the volume of business is still sufficiently large to keep them busy. If they

were able to secure a better supply of fall goods such as Light Sheet Steel, Tin Plates, Stove Pipe, Elbows, Coal Hods, Stove Boards, &c., they would feel much more comfortable. The pressure for goods of this character is unabated. Every effort is being made to keep customers supplied, but available stocks are totally inadequate. The demand for staple goods keeps up remarkably well, the season being very favorable for outdoor work. All kinds of House Furnishing Goods are moving freely with a constant tendency toward the purchase of the more expensive lines. Heavy Hardware jobbers report themselves unable to keep up assortments, as manufacturers appear to be incapable of making good deliveries on orders long since booked. The supply of such staples as Horseshoes and Bolts is under the demand, and standard sizes of ordinary Iron and Steel Bars are constantly running short. The general demand for Wagon Material and Heavy Hardware Supplies is in excess of the business done in these lines in previous years.

St. Louis.

(By Telegraph.)

The tendency in the Hardware market is along the broadening line which has marked it for some time. It is certainly a source of great satisfaction to the jobbing trade to have such conditions prevailing, and nothing seems in sight to prevent another record breaking month in October. Prices are well maintained on most classes of goods, but it might be noted that the price of Scythes, Steel goods and other Farm Implements has been considerably reduced since the dissolving of the association, practically making an open market on prices. It is rather early to expect relief in the certain lines of goods in which scarcity of supply has been ruling, but it is hopeful that conditions in this direction will soon be remedied. No complaint is heard in the matter of collection.

Philadelphia.

Supplee Hardware Company.—The absence of the writer during a portion of the time since his last letter, and especially on the dates when letters were due, has prevented communications reaching you in the interim. During that time we look upon trade in our city as having been exceptionally good and in excess of the previous year. During this active distribution of goods many kinds have been scarce, and it was with difficulty that they could be obtained unless orders were placed with the manufacturers at a very much earlier date than actual requirements demanded. Many classes of goods have been quite insufficient, and there have been very few of which there has been an overabundance, while goods obtained from manufacturers with usual promptness have been noticeable. During this period prices have been more than fairly well maintained. The interruption of business necessitated by the universal period of mourning which followed the death of our lamented President recovered quickly, owing to industrial demands, and activity in trade circles, soon after the feeling of depression, resumed normal conditions. The published earnings of some of the largest industrial companies in steel and iron products came as a surprise to many persons in the trade, but gave an indication of the distribution of manufactured products.

It has been recently stated that the products of the soil, while in some cases considerably less than the year previous, will bring in dollars an equal amount of money. This has been generally conceded. The seventh annual meeting of the National Hardware Association, in Cleveland, this year brought a greater number of manufacturers and a larger number of members than have usually recorded their names. There was more than the ordinary opportunity afforded to compare the views of manufacturers as to the present value of merchandise as contrasted with the past and the near future, the consensus of opinion being that goods would continue to rule at not less than present prices during the coming six months. On the part of the jobbers present it was the universal opinion that trade was in a very satisfactory condition, so far as their own business was concerned, and so far as information was obtainable from the retail merchants there was general satisfaction as to the existing conditions. As a full report of the convention was given in your issue of October 10 concerning work up to that writing, and which is obtainable by all readers of *The Iron Age*, it is not necessary to go into the details of that business beyond what information can be found in the columns of that paper.

Nashville.

Gray & Dudley Hardware Company.—As the fall season advances trade continues to improve and a larger volume of business is being transacted every day. The demand for some lines of goods is far greater than the supply, especially such goods as Heating Stoves, Stove Pipe, Coal Hods, Stove Boards, &c. The crops in the South have been unusually good this season and most of them have been harvested, except the cotton crop, and the money which the crops have put in the hands of consumers is being distributed liberally.

The trade in the Builders' Hardware department is also especially good. All contractors and carpenters have as much work as they can undertake, and indications are that next spring there will be more building in this section of the country than ever known before, although the past 12 months have been extremely satisfactory.

Collections are holding up very well for this month.

Louisville.

W. B. Belknap & Co.—The market is strong, an advance of $2 a ton having been scored on Iron Bars during the past week. We are at the busiest time probably of the fall trade. Later on, when the mills are all running and bad weather begins to cut a figure probably we shall have a sufficient supply.

There is much interest evinced in the meeting of the National Hardware Association at Cleveland this week, as questions of general policy and importance will necessarily arise. The deliberations of this body ought to be of great benefit to the trade at large in securing certain uniform methods in business, establishing for principals and employees high standards of character and bringing about necessarily a better understanding between those engaged in the same lines. In short, it ought to be a benefit to everybody, manufacturers, retailers and jobbers. There is no need of any hostility or of fostering any such. There is a certain class of writers who seem to devote themselves to beating the bush for topics and discussions which shall go to set one of these classes against the other and to all the while create and foment animosity. These are generally gentlemen of the pen and office, just as those who were most virulent in their utterances about the Civil War were those who never participated in it, or never smelt powder or felt a wound. People who are really engaged in business understand that there is a good deal to give and take necessarily in transactions running through years. Accusations of a total disregard for the common interest and bad faith with one another ought not to find lodgment in the Hardware breast, whatever it may do in other branches of trade.

Omaha.

Lee-Glass-Andreesen Hardware Company.—The general business situation has not materially changed since our last report. Builders' Hardware, as well as all kinds of seasonable House Furnishing Goods, continue to be in steady demand, and no changes of importance are expected, as long as present favorable conditions exist. Certain staple lines of material that owing to the recent strike have been exceedingly scarce for some months past, are now appearing in much better supply, thus relieving the pressing requirements of the trade for these particular lines.

Although the corn crop west of the Missouri River suffered a shrinkage of more than 50 per cent. of an average crop, still the high price prevailing will offset in a great measure this shortage in the corn harvest. Farmers are obtaining good prices for all their productions, and as the small grains crop proved to be in excellent supply, coupled with the remunerative market prices on all kinds of live stock, the general condition of affairs throughout the country districts may be considered on the whole as very satisfactory.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—While trade is fair in this section it is not what we expected for October. This is to be accounted for partly by the abnormal business done in July and August, which now seems must come out of fall trade.

We are further handicapped by the low prices prevailing for two of our staple products—wheat and hops. With wheat bringing 40 cents a bushel, and sacks to come out of this, farmers are disposed to sell only where they are compelled to. Hops are not moving, as price has opened one-third off from what was expected earlier in the season. However, we have the stuff for collateral, and when it is sold there should be a quickening all along the line.

Collections drag where we had expected they would be better at this time than for several years past.

NOTES ON PRICES.

Wire Nails.—The demand for Wire Nails continues unabated, but it is being comfortably met by the increased productive capacity. No open change has been made in quotations, and while the largest producers are not taking the initiative, prices are being met at competitive points. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....$2.30
To jobbers in less than carload lots..... 2.35
To retailers in carload lots..... 2.40
To retailers in less than carload lots..... 2.50

New York.—Wire Nails are meeting with an excellent demand in the local market at unchanged prices. Quotations are as follows:

To retailers, carload lots on dock.....$2.53
Small lots at store 2.60

Chicago, by Telegraph.—The favorable weather for building operations is probably responsible for the continued heavy business reported in Wire Nails by manufacturers. They have observed no indication of any falling off and expect none until the closing in of winter. The slight irregularity in prices at some points, due to increasing competition, has not caused any change in the quotations made by the leading maker of Wire Nails, and it is not expected that any change will be made until a greater necessity for it appears. Local jobbers report an increasing trade as compared with last week. Prices are maintained at $2.45 for carload lots and $2.50 for small lots.

St. Louis, by Telegraph.—The market for Wire Nails is in a very satisfactory condition, and we can note no change in the general features. We quote carload lots to retailers at $2.50, base, and less than carload lots at $2.55 to $2.60.

Pittsburgh.—Demand for Wire Nails continues large and the output of the mills is being taken by the trade about as fast as made. Were it not for the increase in new productive capacity in Wire Nails, prices would no doubt be much firmer than they are now. As we have before noted, concessions in prices of Wire Nails are being made right along, and in some cases the cuts are quite heavy. As yet there has been no intimation given of a reduction in established prices. We quote, f.o.b. mill, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....$2.30
To jobbers in less than carload lots..... 2.35
To retailers in carload lots..... 2.40
To retailers in less than carload lots..... 2.50

Cut Nails.—There is a general complaint among Cut Nail mills of their inability to obtain steel. This has resulted in delayed shipments of Steel Nails, with the accompanying annoyance to the trade. The scarcity of Steel Nails has been so pronounced that in some instances buyers have been obliged to accept Cut Iron Nails as a substitute. Trouble in this direction has not been experienced with Wire Nails, as most of the mills make their own steel. Quotations are as follows, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots.....$2.05
Less than carload lots.....$2.10 to 2.15

New York.—The general features in the local Cut Nail market are unchanged. Demand continues fair, but jobbers complain of delayed shipments from mill. New York quotations for carload and less than carload lots are as follows:

Carload lots on dock.....$2.18
Less than carload lots on dock..... 2.23
From store.....$2.18 to 2.30

Chicago, by Telegraph.—The demand for Cut Nails continues very good within the usual limits. Small lots are selling at $2.35.

St. Louis, by Telegraph.—No change can be noted in the market for Cut Nails, and the demand is considered very satisfactory. Prices rule the same, small lots from store being quoted from $2.30 to $2.35.

Pittsburgh.—There is a moderate demand for Cut Nails, but considerable unevenness in prices. In some cases fixed prices are being fairly well maintained, but at competitive points material concessions are made. We quote for domestic trade, f.o.b. Pittsburgh, plus Tube freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots.....$2.05
Less than carload lots..... 2.10

Barb Wire.—Eastern demand for Barb Wire is light, and at other points there is less urgency than formerly. The general volume of business is, however, considered satisfactory for the season. Concessions in price are made at competitive points.

Chicago, by Telegraph.—Manufacturers are enjoying a sustained demand for Barb Wire, which is free from any irregularity in prices. Local jobbers report their trade spasmodic, but the volume of business in the main is up to the usual average. Carload lots are quoted at $2.75 for Painted and $3.05 for Galvanized. Less than carloads are quoted $2.85 and $3.15 respectively, with these prices firmly held.

Pittsburgh.—In some sections of the country, notably in the South and Southwest, demand for Barb Wire is heavy, but at other points is only fair. The general condition of the market is regarded as quite satisfactory for this season of the year. Prices are being well maintained, concessions being made only for desirable orders and at competitive points. For domestic trade we quote: Galvanized Barb Wire, $2.90 in carload lots to jobbers, and Painted, $2.60. Terms, 60 days net, 2 per cent. discount for cash in 10 days, f.o.b. Pittsburgh.

Carriage Bolts, Machine Bolts, &c.—A meeting of the manufacturers of this line of goods was held to-day and an advance of about 5 per cent. was made in prices. The reports from the different plants are most satisfactory, both as to the volume of business and the tone of the market. There is some difficulty in obtaining material, and most of the manufacturers on this account and in connection with the heavy demand are behind on their orders. The new discounts determined upon by the manufacturers are as follows:

	Discount.
Common Carriage Bolts	65 and 2½ %
Machine Bolts with H. P. or C. P. Plain Nuts	70 and 2½ %
Machine Bolts with C. & T. Nuts	65 and 7½ %
Machine Bolts without Nuts	70 and 12½ %
Machine Bolts, Blanks	70 and 2½ %
Bolt Ends with H. P. or C. P. Plain Nuts	70 and 5 %
Bolt Ends with C. & T. Nuts	65 and 10 %
G. P. Coach Screws	75 %
Cone Point Lag Screws	75 and 5 %
Skein Screws	75 %
Forged Set Screws and Tap Bolts	60 %
Plow Bolts and Guard Bolts	60 and 5 %
Washer Head Coach Screws	70 and 5 %

Plain Wire.—There is a continuance in the large demand for Plain Wire. Quotations are unchanged.

Chicago, by Telegraph.—Good trade in Plain Wire is reported by both manufacturers and jobbers. The manufacturers of Bale Ties are still in arrears in filling orders, and this causes a steady demand for Wire for baling purposes. Carload lots of Wire are held at $2.40 and small lots from stock at $2.50.

Pittsburgh.—We note a continued heavy demand for Plain Wire, and the output of the mills is taken as fast as made. Prices are firm and only for very desirable

orders and at competitive points are any concessions in prices being made. For domestic trade we quote:

To jobbers in carload lots	$2.25
To jobbers in less than carload lots	2.30
To retailers in carload lots	2.35
To retailers in less than carload lots	2.45

Galvanized Wire up to No. 14 is 40 cents advance on Plain; Nos. 15 and 16, 75 cents advance, and Nos. 17 and 18, $1 advance. Terms are 60 days net, with 2 per cent. off for cash in 10 days, f.o.b. Pittsburgh.

Registers.—The market for Registers and Ventilators is in an improved condition, and some of the manufacturers at least are announcing higher base discounts, 60 and 10 per cent. being a figure named by leading makers. Others, however, are naming lower discounts, and the market is thus not entirely even. The prices which have ruled on this line for some time are referred to by the manufacturers as unprofitably low, and with the good demand which prevails they are endeavoring to realize more substantial profits.

Nuts.—A meeting of the manufacturers of both Hot Pressed and Cold Punched Nuts was held October 15, and the following revised quotations adopted, which are subject to the usual abatement on large lots:

	Off List.
Hot Punched Square Blank Nuts	5.20
Hot Punched Hexagon Blank Nuts	5.80
Hot Pressed Square Tapped Nuts	5.00
Hot Pressed Hexagon Tapped Nuts	5.60
Cold Punched Plain Blank Square Nuts	5.00
Cold Punched Plain Blank Hexagon Nuts	5.30
C. T. & R. Blank Square Nuts	5.20
C. T. & R. Blank Hexagon Nuts	5.80
Cold Punched Plain Tapped Square Nuts	4.80
Cold Punched Plain Tapped Hexagon Nuts	5.10
C. T. & R. Tapped Square Nuts	5.00
C. T. & R. Tapped Hexagon Nuts	5.60

Shot.—The market for Shot is in better condition than for some time, and prices are being quite firmly maintained. The disturbance from the lower quotations made by jobbers has, to a good extent, ceased, as their stocks purchased at low prices are becoming exhausted.

Wire Chain Lists.—The Bridgeport Chain Company, Bridgeport, Conn., manufacturers of Triumph and Brown Chains, and the Oneida Community, Kenwood, N. Y., makers of Niagara and Eureka Chains, have adopted a uniform price-list for the above brands of Wire Coil and Halter Chains. This list bears date September 16, and is as follows:

Coil Chain, per 100 feet.	Halter Chains, per dozen.	
In packages of 100 feet.	4½ feet.	6 feet.
6/0	$9.00	$5.75	$7.50
5/0	7.50	5.00	6.10
4/0	6.50	4.25	5.30
3/0	5.25	3.50	4.50
2/0	4.50	3.00	3.85
0	4.00	2.65	3.35
1	3.50	2.30	3.00
2	3.10	2.05	2.70
3	2.90	1.85	2.50
4	2.75	1.75	2.35
5	2.65	1.70	2.25
6	2.55	1.65	2.15
7	2.50	1.65	2.10

Scythes.—An effort was made last week to secure united action by the manufacturers in the matter of price, but without success. The market is accordingly an open one and prices are materially lower than a few weeks ago. The jobbers are beginning to place orders, and it is anticipated by some that the supply of Scythes for next season will be inadequate, as both the wholesale and retail trade are very bare of the goods on account of the extreme conservatism with which they were purchased during the high prices established by the association.

Shovels and Spades.—The report in the daily press that the recently organized Ames Shovel & Tool Company would build a large Shovel works in the Pittsburgh district, and that it is their intention to concentrate all the Shovel works of the above interests in Pittsburgh, is without foundation. The officials of the Ames Shovel & Tool Company recognize that at the present time the Shovel business is perhaps overdone, and it is not likely there will be any increase made in capacity. The Shovel Association is still in existence and will probably be continued for some time. Should the association be dissolved at some time in the future it is likely the Ames Shovel & Tool Company would take over four or five more of the principal Shovel works, among these being one or two in the Pittsburgh district. However, nothing definite in this direction has been done. The new works of the Pittsburgh Shovel Company, at West Lechburg, near Pittsburgh, will soon be completed and put in operation. This is a very large plant and will make a full line of Shovels. The concern will also make their own Handles, and have already started up this portion of their factory.

Cordage.—The general conditions of the Rope market remain about the same as last week. Manufacturers, as a rule, quote Manila Rope, on the basis of 7-16 inch and larger, at 11½ cents per pound, with a rebate of ¼ cent for large quantities. Sisal Rope, on the same basis, is quoted at 9¼ cents, with ¼ cent rebate. Lower prices are made, however, by other manufacturers, as follows: Manila Rope, 11¼ cents; Sisal, 8¾ cents per pound, with ¼ cent rebate for large lots. Demand is fairly good.

Glass.—Demand for Window Glass for the past few weeks has not been up to expectations. One explanation is that the weather has continued mild so that dealers have not been called upon to supply requirements that accompany the first decidedly cold weather. There was a general start of the co-operative factories on October 15. The combine's plants are expected to go into operation November 1. Jobbers' quotations are as follows:

	Discount.
Less than car lots, from store	80 and 20 %
Carloads, f.o.b. factory	85 and 5 %

Paints and Colors.—*Leads.*—The demand for White Lead in Oil continues in good volume. Grinders have been annoyed somewhat by the scarcity of Oil, though not to any serious extent. In other than the local market irregularities in prices are reported. Quotations are as follows: In lots of 500 pounds or over, 6½ cents; in lots of less than 500 pounds, 7 cents per pound.

Oils.—*Linseed Oil.*—Scarcity of spot Oil is still the prominent feature of the market. There is a large crop of Flaxseed in the Northwest, but from climatic causes it is from two to four weeks late in getting into the hands of crushers. Such a small proportion has reached the market that crushers have been able to make only partial shipments of Oil contracted for early October delivery. Demand is active for small lots only, as buyers expect prices to be lower when present conditions change and the market settles. City Raw Oil is held at 65 to 66 cents, according to quantity. Out of town Raw is quoted at 60 cents per gallon in five-barrel lots. Boiled Oil is 2 cents per gallon advance on Raw.

Spirits Turpentine.—While the local Turpentine market has been quiet, owing to the absence of large buyers, the firmer tone in the South has caused prices to advance ½ cent per gallon. Business at this point is confined to jobbing lots. Quotations, according to quantity, are as follows: Southerns, 38 to 38½ cents; machine made barrels, 38½ to 39 cents per gallon.

THE VAN WAGONER COMPANY.

C. S. VAN WAGONER, late of the Van Wagoner & Williams Company, has organized the Van Wagoner Company, and has been chosen president. Manufacturing will begin about December 1, and it is expected that goods will be ready for the market by the first of the year. The first goods to be made will be a novel Screen Door Hinge. To this will be rapidly added a line of Hardware and specialties. Offices of the Van Wagoner Company will be situated in Cleveland, Ohio, and New York. Mr. Van Wagoner has many friends in the trade, who wish him success in this new departure.

L. R. SIMPSON, secretary of the Wilcox Mfg. Company, Aurora, Ill., sailed for Europe on the "St. Louis" on Wednesday. His plans are to rest until spring, and then devote several months to looking after their export trade.

CLEVELAND HOSPITALITY.

One of the abiding impressions made by the Cleveland meeting will be of the cordial and liberal hospitality which was extended to the association and its guests by the manufacturers of the city. The work was taken in hand early, and careful preparations made so that the entertainment might be, as it was, all that could be desired.

Cleveland Manufacturers' Committee.

The committee of Cleveland manufacturers who had charge of the general arrangements of the convention, and who provided so acceptably for the entertainment of the delegates and of the visiting delegates and manufacturers, are to be congratulated on their efficiency and their considerate and ample hospitality. The committee was constituted as follows:

S. D. LATTY, *Chairman*,
The Kirk-Latty Mfg. Co.

E. S. PAGE, *Vice-chairman*.
The Cleveland Wire Spring Co.

F. G. SMITH, *Secretary*,
The Osborn Mfg. Co.

F. F. PRENTISS,
The Cleveland Twist Drill Co.

A. S. UPSON,
The Upson Nut Co.

C. E. ADAMS,
The Cleveland Hardware Co.

W. P. CHAMPNEY,
The Eberhard Mfg. Co.

LYMAN H. TREADWAY,
The Peck, Stow & Wilcox Co.

W. S. BIDLE,
The Cleveland City Forge & Iron Co.

A. T. DE FOREST,
American Steel & Wire Co.

N. D. CHAPIN,
The Billings-Chapin Co.

H. F. LYMAN,
The Upson-Walton Co.

FRANK W. DAVIS,
The Lake Erie Iron Co.

E. G. BUCKWELL,
The Cleveland Twist Drill Co.

THOS. P. ROBINS,
The Cleveland Hardware Co.

W. N. BOWLER,
The Forest City Paint & Varnish Co.

R. S. PIERCE,
Mechanical Rubber Co.

C. T. DRAPER,
American Tin Can Co.

GEO. W. FORD,
The Sherwin-Williams Co.

GEO. M. NORTH,
The Lamson & Sessions Co.

WM. BATES,
The Kirk-Latty Mfg. Co.

H. W. AVERY,
The Avery Stamping Co.

C. C. PAINE,
The H. C. Tack Co.

H. W. CALDWELL,
The Cleveland Stone Co.

J. C. BRAINARD,
The Johnson & Jennings Co.

and

F. A. SCOTT,
Secretary the Cleveland Chamber of Commerce.

The following are the sub-committees of the Cleveland Manufacturers' Committee, on which devolved the special duties of arranging for the different details of the convention:

Executive Committee: S. D. Latty, general chairman; E. S. Page, vice-general chairman; F. G. Smith, secretary.
Finance Committee: C. E. Adams, chairman; W. P. Champney.
Speakers' Committee: E. S. Page, chairman; F. F. Prentiss, A. S. Upson.
Banquet Committee: E. G. Buckwell, chairman; F. A. Scott, Thos. P. Robbins, W. N. Bowler, R. S. Pierce.
Entertainment of Ladies' Committee: N. D. Chapin, chairman; H. F. Lyman, Frank W. Davis, J. H. Early, J. C. Brainard.
Smoker Committee: Wm. Bates, chairman; H. W. Avery, C. C. Paine, H. W. Caldwell, J. C. Brainard.
Programme and Printing Committee: Geo. W. Ford, chairman; F. A. Scott, Geo. M. North.
Drive Committee: F. G. Smith, chairman; A. F. De Forest, C. F. Draper.

Drive Through the City.

On Thursday afternoon the corridors of the Hollenden were comparatively deserted, as the Cleveland manufacturers gave the delegates and the visiting ladies a drive through the city. An opportunity was thus afforded to enjoy a view of Cleveland, with its elegant streets and residences, and to get something of an idea of its great industrial and commercial interests. The drive was via Euclid avenue, through the parks and boulevard to Euclid Club and the Garfield Monument.

Entertainment for the Ladies.

The visiting ladies at the convention, more than 70 in number, were delightfully entertained, and made to feel entirely at home by the hospitality and courtesies extended to them. N. D. Chapin of the Billings-Chapin Company had the pleasant duty of entertaining the ladies, and was given valuable assistance by the efficient committee of local ladies, which was made up as follows:

Mrs. A. T. De Forest, chairman; Mrs. Geo. T. McIntosh, Miss McIntosh, Mrs. J. H. Early, Mrs. F. F. Prentice, Mrs. W. P. Champney, Mrs. B. F. Powers, Mrs. Bert Powers,, Mrs E. G. Buckwell, Mrs. B. P. Olmsted, Mrs. S. D Latty, Miss Edna Scofield, Mrs F. W. Davis Mrs. H. C. Holt, Mrs. F. C. Case, Mrs. H. Rudd, Mrs. R. W. Ney, Mrs. F. H. Rose, Mrs. Geo. W. Avery, Mrs. Jas. Storer, Mrs. H. J. Boggis, Mrs. O. A. Austin, Mrs. Chas. Pennington, Mrs. H. W. Avery, Mrs. Moore, Miss Maennel.

On Wednesday morning an informal reception was given the visiting ladies by the local committee in the banquet room of the Hollenden Hotel.

Wednesday evening, from 5 to 8, the Cleveland ladies tendered the visiting ladies a more formal reception at the Colonial Club, at which supper was served. Fourteen large tables in the club's banquet room were required to accommodate the 84 guests and their hostesses. The effect of the decorations was very pretty. Each table was lighted with candles, the red shades blending nicely with the American beauty roses in the centerpiece. Francis Sadlier rendered several vocal selections, adding much to the pleasure of the reception.

F. G. SMITH, Secretary Cleveland Manufacturers' Committee.

A drive through the city was taken on Thursday afternoon. A stop was made at the Euclid Golf Club, where refreshments were served.

On Thursday evening the Lake Erie Iron Company tendered the ladies a theater party at the Empire Theater, the lower tier of boxes being reserved for them.

Special trolley cars took the ladies to the Olney Art Gallery on Friday morning, where they remained for about an hour and a half. No entertainment was provided for the afternoon, as it was thought that some of the ladies would like to have the time to themselves and rest for the banquet in the evening, or see the city in their own way.

A detail of the Cleveland ladies was in constant attendance at the Hollenden, and made every effort to make it pleasant for their guests.

The Smoker.

On Wednesday evening at 8 p.m. an enjoyable smoker was held in the large dining room of the Hollenden, which was attended by about 500 members and guests. At each plate was placed a handsome pipe, a pouch of tobacco and a stein, which was kept well filled. Those present welcomed the Southern delegates with "Dixie," the Canadians with "God Save the Queen," and all united in "America." Excellent music was provided by the Saxaphone Quartette from the Empire Theater, Francis Sadlier, one of the best local vocalists, the Ionic

Quartette, the Metropolitan Quartette, and Karl Hodge of the Kirk-Latty Company, whose flute solo was greatly appreciated. A light supper was served, and the smoker broke up with "Auld Lang Syne."

Entertainment Booklet.

A feature of the gathering quite unique in conception was a tastefully arranged booklet, 5½ x 3 inches, containing six leaves, and designed to furnish information in regard to the entertainments provided. On the first leaf was a brief programme of the various events scheduled for the three days. The next three leaves, perforated across the center, were in the nature of a stub at the top giving the essence of each entertainment, a leaf for each, with a numbered coupon at the bottom, entitling the holder to admission or transportation, as the case might be. The first coupon, for instance, admitted the holder to the smoker at the Hollenden, the next one covered the drive on the following day, and the third admitted to the banquet Friday evening. On the last leaf was a tender by the Postal Telegraph and Western Union and the two telephone companies of the complimentary use of their lines for the transmission of personal and family messages between the hours of

WM. H. POWELL.

7 and 9 p. m., October 9, 10 and 11, to the delegates and visiting manufacturers holding entertainment tickets.

THE BANQUET.

On Friday evening a banquet was tendered by the local manufacturers. The function was held in the assembly room of the Chamber of Commerce. The banquet hall and tables were exquisitely decorated, and as the guests to the number of 500 filed into the room to the soft music of an orchestra hidden in a bower of palms there were many exclamations of admiration. The banquet is said to have been the largest of the kind ever held in Cleveland.

At the speakers' table, which occupied an elevated position in the front of the room, were seated the following gentlemen: Richard W. Shapleigh, Brace Hayden, T. Jas. Fernley, H. H. Bishop, Jno. Bindley, Wm. Starke, Judge Francis J. Wing, Hon. M. A. Hanna, Virgil P. Kline, Dr. Geo. H. McGrew, Chas. L. Pack, S. D. Latty, E. S. Page, R. A. Kirk and Jno. C. Koch.

Hon. Francis J. Wing acted as toastmaster. The retiring president, Richard W. Shapleigh of St. Louis was the first speaker. He congratulated the association upon its growth, and took occasion to renew the thanks of the body to the citizens of Cleveland, reiterating the remarks made in the afternoon that every visitor sincerely appreciated the many kindnesses shown.

Senator Hanna's Speech.

United States Senator Marcus A. Hanna was then introduced and received a great ovation. Senator Hanna's brief remarks were devoted to the subject of commercial expansion. He spoke, in part, as follows:

When I accepted the invitation to attend this banquet I made it a condition that I should not be called upon to make a set speech. The chairman of the committee said he would agree to the condition, but that he would not be responsible for the guests.

I believe in organization, and have always appreciated the strength and co-operation, whether in business, politics or public affairs. The combination of mutual interests working in harmony together produces the greatest results possible to be obtained.

In the progress of events in the natural development of this country we are reaching what I call the science of business. The evolution has been going on during the last century at a rapid rate, and as we stand to-day at the dawn of this new century, and look back to what has been done in the last 50 years, we are almost surprised at the result. And that result is but the beginning of this evolution in the great industrial forces that are now going on in the world. Older nations are maintaining large armies, increasing naval forces, and seem to be bent upon one idea that their supremacy must depend upon the force of arms. Not so the policy of Americans.

Not so the mission of the American business man; he is willing to meet any condition whatever it may be, but, above all, he is content to succeed in the great industrial and commercial world.

Looking to the future what may we not expect of the United States? The growth of our industrial interests has reached a point where we must stop and consider this feature—where shall we find our market for our surplus? That question will soon be brought home to the statesmen as well as to the business man, and that question is an important one for our business organizations to consider whenever and wherever they meet on such occasions as this. The organized business interests of the United States are now looking to foreign markets, seeking opportunities to find a market for their surplus, and we must consider that either one of two things must happen—either these markets must be found or production curtailed. We have reached a point that I have expressed as being on the firing line of the world's trade.

When these great questions were considered in the halls of Congress I have heard it sneeringly remarked that the commercial sides of these questions were unworthy of consideration. I say for America it is the paramount consideration.

It is one of the most important questions of our commercial development, and we should begin to lay the foundation which will enable us to compete with the world's manufacturers. We have, as I said, the natural resources; we have the finest mechanics in the world, and I can safely say that we have the best business men in the world, and all we lack is the opportunity to place these goods in competition with the world, and in any market of the world.

And I want to say on this occasion that the connecting link in getting to this condition is the American ship with the American flag.

The captain of every ship that flies a foreign flag, and that carries their products all over the world, is an agent for the producer. Every time these flags are seen in the harbor it is an object lesson to us, because ours is not there.

We are all alive to the great question of an isthmian canal, and the American people are in favor of an isthmian canal.

I allude to these facts not because I am advocating the Merchant Marine bill, but because I want to impress upon the business men of the United States and those of you who are at the head of these great industries who are pushing your business all over the world and trying to extend it.

Virgil P. Kline responded to the sentiment, "Commercial Honesty." Mr. Kline made a very interesting address and the high standard outlined by him was liberally applauded.

In the absence of James H. Hoyt, who was down on the programme for an address, but was unable to be present, Judge Wing filled his place, and paid high tributes to the work being done by the business men who formed the guests of the evening. His address concluded the banquet, which will long be remembered by all who had the privilege of participating in it.

The Berger Mfg. Company, Canton, Ohio, invited all the delegates and guests at the convention to visit their new works. A special train left the Valley Depot at 7.15 a. m., returning at 7.20 p. m.

Organization of the American Hardware Manufacturers' Association

THE banquet hall of the Hollenden Hotel was crowded on Wednesday afternoon with the manufacturers and their representatives, who had met on the invitation read by H. B. Lupton of the Oliver Iron & Steel Company at the morning session of the jobbers' convention. The object of the meeting was to consider the advisability of forming a manufacturers' association.

Manufacturers Present.

Among those present were the representatives of the following manufacturers:

Henry Disston & Sons, Philadelphia; North Wayne Tool Company, Hallowell, Maine; Hussey, Binns & Co., Pittsburgh, Pa.; Withington & Cooley Mfg. Company, Jackson, Mich.; Standard Chain Company, Pittsburgh, Pa.; Fayette R. Plumb, Incorporated, Philadelphia, Pa.; Standard Horse Nail Company, New Brighton, Pa.; the Hopkins & Allen Arms Company, Norwich, Conn.; the Atlas Bolt & Screw Company, Cleveland, Ohio; the Kirk-Latty Mfg. Company, Cleveland, Ohio; Goodell Company, Antrim, N. H.; G. & H. Barnett Company, Black Diamond File Works, Philadelphia, Pa.; the Pike Mfg. Company, Pike Station, N. H.; Pittsburgh Steel Company, Pittsburgh, Pa.; the Bronson-Walton Company, Cleveland, Ohio; Russell & Erwin Mfg. Company, New Britain, Conn.; National Sweeper Company, Marion, Ind.; Iron City Tool Works, Limited, Pittsburgh, Pa.; the Berger Mfg. Company, Canton, Ohio; Lufkin Rule Company, Saginaw, Mich.; Lovell Mfg. Company, Erie, Pa.; O. P. Schriver & Co., Cincinnati, Ohio; Wabash Screen Door Company, Chicago, Ill.; the American Axe & Tool Company, New York, N. Y.; McCaffrey File Company, Philadelphia, Pa.; Oneida Community, Limited, Kenwood, N. Y.; the Atha Tool Company, Newark, N. J.; the Cleveland Hardware Company, Cleveland, Ohio; Oliver Iron & Steel Company, Pittsburgh, Pa.; the H. C. Tack Company, Cleveland, Ohio; Reynolds Wire Company, Dixon, Ill.; the Columbian Hardware Company, Cleveland, Ohio; Nicholson File Company, Providence, R. I.; Cleveland Foundry Company, Cleveland, Ohio; National Sewing Machine Company, Belvidere, Ill.; Peck, Stow & Wilcox Company, New York; Tower & Lyon, New York.

The meeting was called to order by H. B. Lupton, who nominated Robert Garland of the Standard Chain Company as temporary chairman. F. G. Mitchell was elected temporary secretary. Mr. Garland then made the following remarks, explaining the object of the meeting:

Chairman Garland's Address.

We have met here in accordance with the call to consider the advisability of forming an association of Hardware manufacturers.

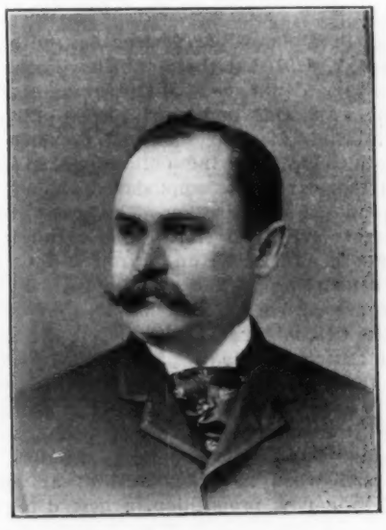
Most of us here have been attending the conventions of the National and the Southern Hardware associations, meeting the jobbers in pleasant relationship and discussing with them at their open meetings such trade questions as would come up. The jobbers are organized, however; we are not.

Unquestionably much can be accomplished by organization. If there are any matters of variance as between the manufacturer and his good friend the jobber we can discuss such questions at our separate sessions, and with both bodies organized we should be able to reach better results. Coming here as individuals, we accomplish little or nothing.

The Hardware Jobbers' Association must be successful or they would not live from year to year, constantly growing stronger. The Association of Agricultural Implement Manufacturers is a successful organization to which attention might be called. This association is in a very flourishing condition, and the members of it have been well repaid for their efforts.

It would be the idea, as I take it, for our association to meet, say, twice a year, once during the convention of the National Jobbers' Association and again at the Southern Jobbers' convention.

Matters of important interest are being constantly brought to our attention by the jobbers; often through the executive committees of their associations. Certainly, therefore, with our own organization we could reach better understandings, work out better results, than by working along in a vague way as heretofore. All around us we see trade organizations—jobbers and retailers—working for the betterment of their business, but we manufacturers go along as we best know how. All kinds of different contracts are made covering such important matters as quantities, term of contract, privilege of increase, guarantee of price, &c. Some of us have, of course, remedied such abuses very materially, but there is still room for general improvement. Some men, for instance, new in business, will be glad to make any kind of a contract, give anything in the way of a guarantee or a long term contract for an indefinite quantity, simply for the glory of selling one of our large jobbers. He is simply buying experience, and he can figure what it costs him when at the close of his business year he examines his balance sheet. Manufacturers of this kind are a menace to the manufacturing business; they are a menace to the jobbing trade as a whole; and just as the jobber, perhaps new in the business or with wrong ideas or little experience, has been benefited by being taken into the counsels of his organization, so can we attain more uniformity in our dealings with the trade by a general discussion of leading trade questions.



FAYETTE R. PLUMB, President.

We are all, of course, aware that action taken by our association (should we perfect one) would not bind all our members, but certain measures could be recommended and various abuses could be eradicated which would certainly be taken up by a sufficient number of manufacturers to be of lasting benefit to the trade at large.

It is unnecessary, however, to further expatiate on these matters, and while it just occurs to me that our object here is to form a "union," yet we can say to our jobbing friends that this is not intended to be one of the tyrannical unions to which J. Pierpont Morgan says "Incorporate." We don't need to incorporate. There need be no special frills, simply a modest organization to meet with our buying friends now and then, and jointly do all in our power to make the rough places smooth.

C. S. Van Wagoner's Remarks.

Chairman Garland called upon C. S. Van Wagoner, president of the Van Wagoner Company, Cleveland, Ohio, for his ideas and suggestions regarding the formation of an organization.

Mr. Van Wagoner said that since the jobbers had become organized he had been in favor of the manufacturers forming an association. Manufacturers have something of the same kind of troubles as the jobbers. He explained that greediness breaks down the friendly relations that should exist between manufacturers, and that the antagonistic feeling too often present might in a large measure be removed by an association. Good will is the only ground that will bring manufacturers together. He continued by saying that if good will among them was the only thing secured, the organization would be effective. It should cause the laying aside of the rivalry and trade animosity and promote harmony. He

went on to say that if organization should cause good faith among the members benefit would result.

A good Executive Committee and a good man for the head, a tower of strength such as Mr. Supplee had been to the Hardware Jobbers' Association, he explained, would develop a good organization. The first thing is to get the man who would give the time to unselfishly develop the interests of the organization. Mr. Supplee had done more along this line for the other association than can be estimated. The great power to be attained is in good will among manufacturers, as it is among jobbers. He closed his remarks by saying that he would be willing to go blindly into the association even if good will were the only thing to be attained.

The chair then called on any one to express his ideas on the subject, but as no one volunteered he said that the manufacturers present seemed to be modest in expressing themselves, but that they need not feel so, as they were in a family of manufacturers. He then urged an expression of opinion, and asked whether it was thought advisable to go ahead. All to whom he had spoken seemed in favor if it, but he should like the opinions of those present of the subject.

Remarks of R. R. Williams.

Richard R. Williams of *The Iron Age*, on being called upon to speak, said that those who have considered the subject have no doubt seen both advantages and difficulties in the way. One important benefit of organization is that it brings men together and promotes good fellowship, which is such an influential factor in trade. This is a good that can be accomplished in a practical way by the proposed organization. The great difficulty is that interests are so diverse. One manufactures one line and another turns out an entirely different product. Without attempting to indicate the various objects to which the association might be devoted, or the different good results that might be accomplished, the opinion was expressed that if the matter were taken hold of and placed in the hands of a wise committee the manufacturers need be in no fear as to the result. Things will be accomplished that are worth accomplishing. The association will illustrate the experience familiar to every business man when he takes hold of an opportunity presented by a new proposition, a new departure or a new policy. At first he sees that there is something to be accomplished in that direction, but gradually the idea or plan expands and broadens. So with this association, beginning with a few things that are worth trying to accomplish, the number of things to be accomplished will increase. If this project is taken hold of earnestly by a group of manufacturers, the association will grow by its own merit and value. It will assume such a shape that it will appeal to manufacturers. The few manufacturers who form the association will attract others by the spirit and conservatism that they manifest.

Manufacturers' Associations in Canada.

Mr. Garland then asked J. Hardy, whom he said was the secretary-treasurer of 43 manufacturers' associations in Canada and the provinces, if he would speak.

Mr. Hardy said that he labored under the disadvantage of not having heard the previous discussion, having just entered the room. His experience of 10 or 11 years with manufacturers was that whenever they get together they achieve some progress toward matters leading up to buying terms, cash discounts, &c., but more especially in getting closer to one another. They first learn to know one another. He went on to say that without getting together to discuss and explain questions and actions, manufacturers continually try to go each other one better in meeting competition. He expressed the view that the association could not be a great success without a careful and judicious Executive Committee and officers. The head of the association, who will have to work out the difficult problems, should be a very capable man. Mr. Hardy then offered to give him any information and particulars he might have regarding agreements, &c., in use in the Canada associations.

Address of Oliver Williams.

Oliver Williams of the Bryden Horse Shoe Company, a member of the National Association of Manufacturers, said that he had noticed a general disinclination of the most interested manufacturers to speak. This was probably due to the fact that all Pittsburgh men are modest. He had come through Pittsburgh on his way to the convention and had caught the fever. He then went on to say that the method of most associations was to get together and adopt a price. Then the first person who got out and sold at five one-hundredths of a cent less was the smartest man in the association. An association means more than that. He continued by saying that his firm make Horseshoes, and that for many years he did his best to know the bottom of the market and that the jobber friends helped the best they could to do that. They were never backward in telling what John Smith sold at, and that if he went below him he would be their friend. He said that since they got in the association the jobbers had improved.

Before forming their association, he explained, the manufacturers "hated each other most lovingly." At the first meeting one of them took off his hat and Mr. Williams said he looked at his head very carefully. The other manufacturer asked him why he did so, and Mr. Williams explained that he was looking for horns. The other manufacturer then stared at Mr. Williams' feet, and on being asked why he did that said he was looking for the hoofs. After three months of organization he found that his competitors could be trusted and would trust each other. To-day he said he has no greater pleasure than to go and have a quiet association meeting.

SAMUEL M. NICHOLSON, Vice-President.

He went on to say that the association had been of immense value. Nearly all of the members are old men and are honest. The association has not been used to squeeze trade. It has been profitable, and each member considers each other member his friend. It is simply the type of every association being organized in these days.

The National Association is one of the greatest of all associations. Its objects are high and broad, and its membership between 2500 and 3000. Among its aims are the fostering of mutual friendship; the encouraging of foreign trade, along which line some very good work has been done; the settling of legal questions for manufacturers who find themselves in trouble, or who want help and are worthy of it, and for the influencing of tariffs and freights. Foreign trade is well worthy of fostering. It is gratifying to know that reciprocity was favored by our late President McKinley and our new President Roosevelt. He then called attention to the fact that soon there will be held a convention of protectionists who are in favor of reciprocity.

He concluded by saying that such an association as

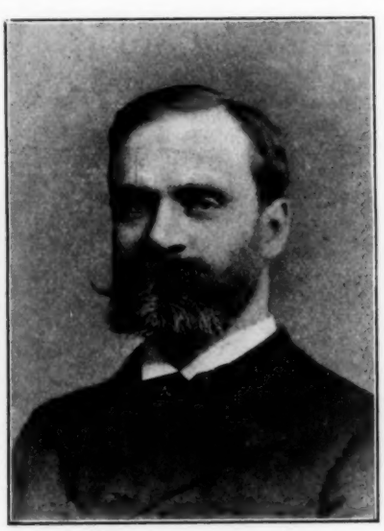
proposed would be of value if simply for friendship's sake, and to prove that most manufacturers have neither horns nor hoofs. It would also give the members a stronger grip on the market.

Address of Hon. D. H. Goodell.

Ex-Governor Goodell was next asked to express his views on the subject. He replied by saying that he was hardly prepared to speak on the subject, as he had not studied the conditions. Organization is an important thing. All large enterprises are carried on through organization. An organization of brains and capital is sure to be a winner. Then he explained that a man at the present time with but little experience could not carry on a business without making blunders. By organization blunders are avoided that would be made if each party worked simply on his own hook.

John C. Schmidt's Remarks.

John C. Schmidt, president of the Standard Chain Company, said that his creed was to get together. Organization gives a real benefit, and he had seen the benefits of it in a recent labor difficulty. Manufacturers are wasting time at the jobbers' conventions, for during the executive sessions the manufacturers have nothing



C. S. VAN WAGONER, Vice-President.

to do, and do it badly. This time could be devoted to meetings of the manufacturers in a more profitable manner. By organization the members will see that there are not as many horns and hoofs on their competitors as they thought. A decided benefit is to be derived from personal intercourse. A double incentive to attend the convention would thus be given. With numbers questions would be decided wisely that previously were vague and unsettled. He closed his remarks by expressing great confidence that an organization would be of important benefit to all.

F. S. Kretsinger

of the Iowa Farming Tool Company, on being called on, said that in the Steel Goods line they had been together for many years, and that he had grown to respect his competitors. The forming of a temporary organization was urged, with officers and a committee of experienced men.

Irby Bennett

of the Winchester Repeating Arms Company, after some facetious remarks which caused much amusement, called attention to the good there is in organization and association. Study the work and experiences of other associations. Read the handwriting on the wall. If the association is formed good will be received from the contact of the members. It will take some kind of an organization to determine what it is purposed to do before further progress can be made. Benefits must result from the brains and energy in the association. He concluded by urging that this be the beginning of an organization by which the interests of members would be protected and advanced.

Scope of the Association.

The chairman explained that the association would in no way try to fix prices, but that its object would be simply to broaden their field and make the trade understand, for example, what 10 days and 30 days mean, what a contract is, perhaps to formulate a uniform contract, or several forms of contract, to reach an understanding concerning guarantees, &c. The association would take a broad view of things, would have no expense except a small assessment, and would meet twice a year at the Hardware Jobbers' conventions. He went on to say that as no adverse opinion had been heard, a resolution was in order to bring the question up for discussion.

General Withington's Address.

General Withington, who was asked to address the meeting, said that the discussion had covered the ground, and that they were ready to take action. He had believed that the gentlemen who had gotten the meeting up would present a suitable plan after having heard the discussion. His acquaintance was with organizations that did not attempt to do much, and had not tried to regulate prices, but to accomplish three things:

1. Regarding deliveries and freight allowances.
2. Determining as to terms and shortening credits.
3. Definition and limitation of guarantees.

Such an association as this might do something along those lines. Other matters in which they might take a hand would be in questions like reciprocity. There is a field for the association that can be occupied to advantage. The members can become better acquainted and good fellowship be secured.

Committee on Organization.

A motion that a committee of ten be appointed to report Thursday was unanimously carried. The chair announced the following committee of ten to formulate plan of organization:

H. B. LUPTON, Oliver Iron & Steel Company.
N. A. GLADDING, E. C. Atkins & Co.
E. G. BUCKWELL, Cleveland Twist Drill Company.
SAMUEL DISSTON, Henry Disston & Sons.
C. S. VAN WAGONER, the Van Wagoner Company.
GEN. W. H. WITHINGTON, Withington & Cooley Mfg. Company.
F. S. KRETSINGER, Iowa Farming Tool Company.
THOMAS C. COLES, American Steel & Wire Company.
FRED. S. MERRICK, Standard Horse Nail Company.
OLIVER WILLIAMS, Bryden Horse Shoe Company.

The inquiry was made as to the definition of a manufacturer and whether the association would be composed of manufacturers and jobbers, or of manufacturers pure and simple. It was explained by Mr. Lupton that the Membership Committee might be the proper party to determine the elegibility of applicants for membership and determine whether they were manufacturers or jobbers. It was also explained that a concern might be manufacturers of one article and jobbers of another. The meeting adjourned to meet at 9.30 a.m. Thursday.

ORGANIZATION OF THE ASSOCIATION.

The American Hardware Manufacturers' Association was formed at the meeting held on Thursday morning in the banquet hall of the Hollenden Hotel. Chairman Robert Garland presided, and after explaining the objects of the association for those present who were not in attendance at the previous meeting, called upon the Provisional Committee for its report.

The Committee Report.

C. S. Van Wagoner, president of the Van Wagoner Company, chairman of the Provisional Committee, reported as follows:

Your committee appointed for the purpose of formulating plans for a permanent organization begs to report as follows:

That this association shall be known as the American Hardware Manufacturers' Association.

OBJECT: To further the interests of the manufacturers and promote cordial relations with the distributers.

It is recommended that a permanent organization be effected, consisting of the following officers:

President:

Fayette R. Plumb, Fayette R. Plumb, Incorporated, Philadelphia, Pa.

Vice-Presidents:

Samuel M. Nicholson, Nicholson File Company, Providence, R. I.
C. S. Van Wagoner, Van Wagoner Company, Cleveland, Ohio.
F. S. Kretsinger, Iowa Farming Tool Company, Fort Madison, Iowa.

Secretary-Treasurer:

F. D. Mitchell, Standard Chain Company, Pittsburgh, Pa.

Executive Committee:

Robert Garland, Standard Chain Company, Pittsburgh, Pa.
Henry B. Lupton, Oliver Iron & Steel Company, Pittsburgh, Pa.
N. A. Gladding, E. C. Atkins & Co., Indianapolis, Ind.
W. S. McKinney, McKinney Mfg. Company, Allegheny, Pa.
Samuel Disston, Henry Disston & Sons, Philadelphia, Pa.
C. E. Adams, Cleveland Hardware Company, Cleveland, Ohio.
James Kelly, Kelly Axe Mfg. Company, Alexandria, Ind.
J. C. Birge, St. Louis Shovel Company, St. Louis, Mo.

Mr. Reitz moved that the report be accepted. An interesting discussion followed, but when the chair put the motion it was carried by a unanimous vote.

Fayette R. Plumb, the newly elected president, took the chair amid much applause, and made the following address:

President Plumb's Address.

I desire to thank each one of you personally for the great honor conferred in selecting me as the first president of the American Hardware Manufacturers' Association. While I greatly appreciate the compliment extended, I am fully aware of the grave responsibilities it entails, but feel greatly encouraged when I review the names of the Executive Committee, as I know that the work of organization will be trusted to able hands.

There are three points which present themselves to my mind at this moment which deserve your consideration:

1. Cash discounts.
2. Contracts.
3. Special brands.

THE CASH DISCOUNTS

have been conceded by nearly all the manufacturers in their desire to meet the wishes of the jobbers, but it should be understood that when terms of 60 days or 2 per cent. cash ten days are granted the bill should be paid in ten days and not in 20 or 30 days. It is customary, however, for some to take their own time, while others have requested that they be allowed to settle their account on the 10th of the next month following purchases, thus securing nearly 30 days before settlement. Therefore, by conceding the 2 per cent. under these conditions we are allowing nearly 2 per cent. per month for money, which we all must recognize is a high rate of interest. There was a time not long distant when all the steel manufacturers granted us a cash discount of 3 per cent., but owing to improved conditions and the consolidation of interests they have thought it wise to make their terms net 30 days. It therefore makes it doubly hard for us when our terms are not complied with.

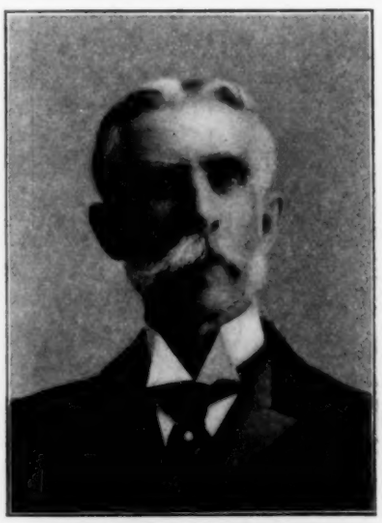
CONTRACTS.

Coming now to the question of contracts, I must again refer you to the steel manufacturers, who not only know how to make contracts, but insist on their observance. These contracts state definitely terms, price, time of delivery and quantity purchased, and if a manufacturer makes such a contract and studies his own interests he will soon learn that it is to his advantage to comply with all of the conditions mentioned in the agreement. On the other hand we are confronted with the fact that a contract made with the jobber means nothing but their protection. If the price declines, or another manufacturer makes a lower quotation, or the demand falls off and he thinks it is inconvenient to take the goods he simply cancels the order and the manufacturer has no redress. I do not wish to infer that this condition has been brought about by the jobber alone. On the contrary, the manufacturer must shoulder a part of it, owing largely to loose methods of doing business pursued by nearly all makers in their endeavor to outstrip others by offering additional inducements.

SPECIAL BRANDS.

In referring to special brands I wish to impress upon you the fact that a few years ago it was the exception for any of our jobbing friends to ask for brands other than those mentioned in the manufacturers' catalogue, but now the demand seems to be increasing steadily, especially since the organization of the National Hardware Association, and if the demand continues the manufacturers' brands will soon be eliminated from the market, and in a few years those who have worked a lifetime to build up a business will lose their identity, and brands which have become famous because of quality and finish will be unknown.

I have taken the liberty of presenting these three points for your consideration and hope you will come prepared to discuss them at our next meeting. Our organization, formed here to-day, must be harmonious to be successful. The formation of cliques, referred to by one of the gentlemen in the discussion of this morning, would be disastrous to any organization. If the National Hardware Association can be made a success I believe the Hardware manufacturers are capable of completing and maintaining a similar organization. I am, therefore, perfectly safe in predicting a bright and



F. S. KRETSINGER, Vice-President.

prosperous future for the American Hardware Manufacturers' Association.

Before taking my seat I must again thank you for the compliment paid me and shall endeavor, through strict attention to duty, to merit your confidence and esteem.

S. G. Hobson's Remarks.

When the question of foreign trade was brought up, S. G. Hobson, the British representative of *The Iron Age*, said that he was present to learn and not to teach. It was his privilege, week by week, to address them through the columns of *The Iron Age*, and therefore it was hardly right that he should occupy their time when they had so much business to get through. He none the less esteemed it a great honor to be invited to address them, and thought the best thing he could do would be to indicate briefly some of the weaknesses in trade methods which tended to retard their export trade to Europe in general, and England in particular.

CAPRICIOUSNESS.

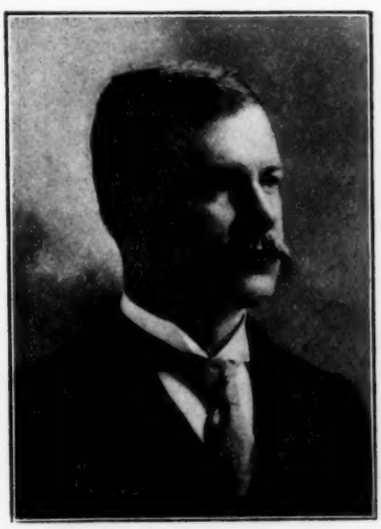
In the first place, he would say to them—avoid capriciousness both in their dealings with their customers and with their agents. For various reasons, there was a feeling throughout England that American exporters only delivered goods when it suited their convenience; that they cultivated English trade merely to dump their surplus. He could assure them that English trade could not be maintained on these lines. The English trade was worth cultivating; but it could only be successfully upheld by thorough methods. He would say, if they

wanted English trade, they must set aside a certain proportion of their yearly production, no matter how small it might be, and make good every engagement entered into on their behalf by their agents in England. This was particularly necessary in filling orders for the London export trade. Great annoyance was often caused to London shippers by the nondelivery of goods ordered for various shipments for South Africa, Australia and Europe.

It was also important to avoid any appearance of capriciousness in dealing with English agents. He recognized that it was not easy to engage just the right men, but if any agent showed that he had the root of the matter in him he should be encouraged. It was advisable to adopt the right line of policy, according to the special needs of their particular lines of goods, but whatever method they adopted it was important they should stick to it.

ENGLISH COMPETITION.

They must not underestimate the capacity of their English competitors. Englishmen were very tenacious, and would not lightly let their trade be taken away from them. The inventiveness of the American was a great point in his favor, but the English manufacturer could



ROBERT GARLAND, Chairman Executive Committee.

make goods as well as they, and the English trader was a man of wide experience and of real ability.

THERE WAS A GROWING DEMAND

in Great Britain for Builders' and Domestic Hardware; for Tools, both Light and Heavy; for Agricultural Implements; for Wood Ware and Pulp Ware; for Guns. All these lines had to be pushed by different methods. He would earnestly advise American manufacturers to come over and prospect for themselves. He would be glad to welcome them one and all to the London office of *The Iron Age*, and would be more than glad to do everything in his power to help them in any way possible.

Membership.

The following manufacturers have expressed their interest in the movement by applying for membership in the association. Most of these names were received at the Cleveland meeting, but a few came in subsequently:

Atlas Bolt & Screw Company, Cleveland, Ohio.
Atha Tool Company, Newark, N. J.
American Axe & Tool Company, New York.
E. C. Atkins & Co., Indianapolis, Ind.
Avery Stamping Company, Cleveland, Ohio.
Berger Mfg. Company, Canton, Ohio.
Bronson, Walton & Co., Cleveland, Ohio.
G. & H. Barnett Company, Philadelphia, Pa.
Bryden Horse Shoe Company, Catasauqua, Pa.
Corbin Cabinet Lock Company, New Britain, Conn.
Cleveland Foundry Company, Cleveland, Ohio.
Columbian Hardware Company, Cleveland, Ohio.
Cleveland Hardware Company, Cleveland, Ohio.
Cleveland Twist Drill Company, Cleveland, Ohio.
Cleveland Stone Company, Cleveland, Ohio.
Henry Disston & Sons, Philadelphia, Pa.
Deming Company, Salem, Ohio.
Grafton Stone Company, Grafton, Ohio.
Garland Chain Company, Pittsburgh, Pa.
Goodell Company, Antrim, N. H.
Hopkins & Allen Arms Company, Norwich, Conn.
Hussey-Binns & Co., Pittsburgh, Pa.
H. C. Tack Company, Cleveland, Ohio.
Iver Johnson's Arms & Cycle Works, Fitchburg, Mass.
Iron City Tool Works, Pittsburgh, Pa.
Iowa Farming Tool Company, Ft. Madison, Iowa.
Jones & Laughlins, Pittsburgh, Pa.
Kirk-Latty Mfg. Company, Cleveland, Ohio.
Kelly Axe Mfg. Company, Alexandria, Ind.
Landers, Frary & Clark, New Britain, Conn.
Lovell Mfg. Company, Erie, Pa.
Lufkin Rule Company, Saginaw, Mich.
Chas. Morrill, New York.
Metal Goods Mfg. Company, Cleveland, Ohio.
McCaffrey File Company, Philadelphia, Pa.
McKinney Mfg. Company, Allegheny, Pa.
National Sewing Machine Company, Belvidere, Ill.
Nicholson File Company, Providence, R. I.
North Wayne Tool Company, Hallowell, Maine.
National Sweeper Company, Marion, Ind.
Norton Tool Company, Cleveland, Ohio.
Old Dominion Iron & Nail Works Company, Richmond, Va.
Ohio Tool Company, Columbus, Ohio.
Oliver Iron & Steel Company, Pittsburgh, Pa.
Oneida Community, Kenwood, N. Y.
Fayette R. Plumb, Incorporated, Philadelphia, Pa.
Peck, Stow & Wilcox Company, New York.
Pittsburgh Steel Company, Pittsburgh, Pa.
Pike Mfg. Company, Pike Station, N. H.
A. J. Phillips Company, Fenton, Mich.
Pressed Steel Rake Company, Buffalo, N. Y.
Reynolds Wire Company, Dixon, Ill.
Rome Mfg. Company, Rome, N. Y.
Rome Brass & Copper Company, Rome, N. Y.
Reading Hardware Company, Reading, Pa.
Stanley Rule & Level Company, New Britain, Conn.
Stanley Works, New Britain, Conn.
Standard Horse Nail Company, New Brighton, Pa.
O. P. Schriver & Co., Cincinnati, Ohio.
Standard Chain Company, Pittsburgh, Pa.
Standard Register Company, Cleveland, Ohio.
St. Louis Shovel Company, St. Louis, Mo.
Stowell Mfg. & Foundry Company, South Milwaukee, Wis.
Van Wagoner Company, Cleveland, Ohio.
Withington & Cooley Mfg. Company, Jackson, Mich.
Wabash Screen Door Company, Rhinelander, Wis.
Wilcox Mfg. Company, Aurora, Ill.

Committee of Membership.

The Committee on Membership, to whom the eligibility of applicants for membership will be referred, is constituted as follows:

William H. Hays, Iron City Tool Works, Pittsburgh, Pa.
George O. Hart, Stanley Works, New Britain, Conn.
Arthur B. Clark, Old Dominion Iron & Nail Works Company, Richmond, Pa.
Edward Ingalls, Atha Tool Company, Newark, N. J.
Thomas Almgill, G. & H. Barnett Company, Philadelphia, Pa.
D. W. Simpson, Wilcox Mfg. Company, Aurora, Ill.
Edward Kemp, Wabash Screen Door Company, Rhinelander, Wis.
F. E. Buckwell, Cleveland Twist Drill Company, Cleveland, Ohio.
W. H. Withington, Withington & Cooley Mfg. Company, Jackson, Mich.

Qualifications for Membership.

There was some discussion at the Cleveland meeting as to the houses which should be eligible for membership. The general consensus of opinion was that membership should be limited to manufacturers, and the matter was thus determined as per the following resolutions, which were unanimously adopted:

Resolved, That the American Hardware Association be composed exclusively and strictly of manufacturers of goods handled by the Hardware trade.

As the matter is thus decided, any firm or corporation engaged in the manufacture of goods handled by the Hardware trade may, upon the recommendation of the Membership Committee and the unanimous consent of the Executive Committee, become a member of the association by subscribing to the constitution and by-laws and the payment of the membership fee of $10. It has also been determined that no manufacturer who is also engaged in the jobbing business can become a member, nor are manufacturers' agents eligible to membership in the association. Applications for membership should be mailed to F. D. Mitchell, secretary and treasurer, First National Bank Building, Pittsburgh, Pa., to secure prompt attention from the Committee on Membership.

The National Hardware Association.

SEVENTH ANNUAL CONVENTION.

THE meeting of the National Hardware Association, at Cleveland, October 9, 10 and 11, a partial report of which was given in our last issue, was unquestionably, in point of attendance and in other respects, one of the most successful in the history of the organization. There was a good representation of the membership, including jobbing houses from all parts of the country, but the number of manufacturers who were present was especially noticeable. The discussions at the open meetings were all more than usually interesting and largely attended both by the members of the association and the visiting manufacturers.

The Association of Manufacturers.

One of the most significant events of the Cleveland meeting was the organization of an Association of Hardware Manufacturers. The call for the meeting for this purpose, as published in *The Iron Age*, doubtless brought out a larger number of manufacturers than would otherwise have been in attendance. In the preceding columns a full account is given of the steps leading up to the forming of the American Hardware Manufacturers' Association, a subject which will doubtless be considered with interest by manufacturers who were not present. It will be seen that the movement starts under favorable auspices, with men of recognized ability and prominence in the trade actively identified with it.

Syndicate Buying.

This is one of the subjects which was discussed by the association, but little was done, except to point out some of the objections to the system as urged by those who are opposed to it. The proportion of the members of the National Association who make use of the system is so large as to render it a very difficult and delicate thing for the organization to take action hostile to it.

What is a Jobber?

A definition of a jobber, according to the views of the association, was given by Mr. Fernley at the Wednesday morning session. After the report of the secretary-treasurer had been presented, Oliver Williams asked the following question of the chair:

I want to ask a question which was brought out by Mr. Fernley. As a manufacturer I would like to know how a jobber is classified. Is it the man who has three travelers, as some of our jobbing houses have? Is it the man who has two travelers? Is it the man who has no traveler, but is on the list of the National Hardware Association? I am asking in perfectly good faith. Are there any jobbers that we are to consider as such that are not in the association?

This question I am asking you because it will be brought up seriously very soon in the association to which I belong. That is the reason I would like to ask that question—how we are to classify the jobbers. We may have men who are classified as retail merchants who buy more than the jobbers buy.

President Shapleigh said that while the question was not strictly in order, Mr. Fernley would take pleasure in answering it.

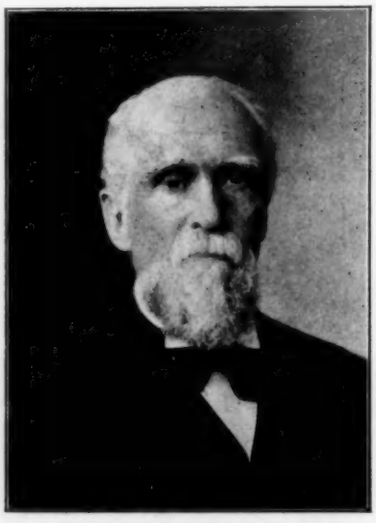
Mr. Fernley's reply was as follows:

I think, in a general way, that it is a proper question and that it is very well for the manufacturers to understand what our policy as an association is. In the first place I would say that we stand on the principle that the jobber is the proper distributer of goods because of the fact that he employs a corps of traveling salesmen to do for the manufacturer what the manufacturer does not do for himself. The fact that a concern belongs to this association is lost sight of at the time we are consulting with manufacturers to classify the trade. We do not ask any manufacturer to place any concern on the jobbers' list because of the membership in this association. Further, we object to no concern on account of nonmembership in this association. In other words, the buying and selling of goods has nothing to do with the policy of this association. We ask the manufacturer to protect jobbers as a class—we use, as an expression, jobbers of the country. In determining who is a jobber we must have before us constantly the line of goods that are being treated of. A concern might be entitled to the jobbing prices on one line of goods, but not on other lines, not being engaged in that particular branch or carrying the stock. We ask that a differential be provided for all jobbers regardless of size. We are opposed to quantity discounts, believing that is a matter that will work out itself. We do not close the door against a smart buyer, neither do we open the door to him. The buying and selling has nothing to do with the work of this association. The question is whether a man is a jobber or not. If a manufacturer will sit down with us, with an earnest desire fairly to make up a list of jobbers, it becomes a very easy matter.

Mr. Williams then spoke briefly, referring to the answer as frank and entirely satisfactory.

ECONOMY IN DISTRIBUTION.

The addresses made at the opening session on the question as to how manufacturers of Hardware and kindred lines can most economically distribute their product were very interesting, notwithstanding the fact that this topic in some form has been so frequently considered before the association. It is to be noted that



R. A. KIRK, President.

all the seven speakers on the programme were present and gave the meeting the benefit of their views. While there was a general recognition of the fact that the jobbing trade was an economical medium of distribution, the attention of the members was called more or less directly to the fact that at times it is necessary for manufacturers to go to the smaller trade to get their goods introduced, and that in other ways the jobber has not always been as considerate as he might have been of the manufacturers' interests. The matter of special brands, upon which manufacturers of reputation do not look with favor, was specially touched upon. In addition to the addresses on this subject which were given in our last issue we present the substance of the remarks made by ex-Governor Goodell and General Withington.

Address of Hon. D. H. Goodell.

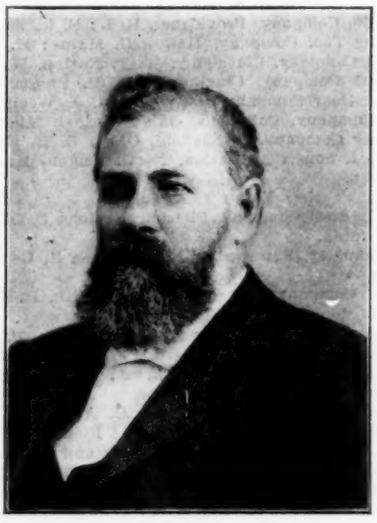
D. H. Goodell, president of the Goodell Company and former Governor of New Hampshire, after some humorous allusions to such natives of the Granite State as Daniel Webster, Zach Chandler, Horace Greeley, Benjamin F. Butler and Harry Wilson, who left the State as soon as they came to man's estate, said he didn't know of any way for a manufacturer to succeed, unless he disposed of what he made. It was not enough to produce for his neighbors and friends, but he must get on a larger basis to succeed in this modern world. He referred to the inability of wheat, corn and peach growers to dispose of their product to the retail trade. He said it was an impossibility for manufacturers to pro-

duce goods and economically distribute them; that they needed some one with adequate conveniences, paraphernalia and opportunities to sell goods so they could be distributed economically and rapidly. They must be transported by men familiar with transportation and then sold. In his opinion railroad organizations and large business organizations were necessary, and without them we could not have attained the eminence and trade we now have.

LARGE ORGANIZATIONS DESIRABLE.

He believed in organizations of large caliber, with broad platforms, conducted by able men possessed of character and honesty. This nation, he said, stood pre-eminent among commercial nations, and it would continue to grow and become more prominent than ever before. A good word was spoken for the secretary and the members were asked to sustain him in his work and operate harmoniously.

He contended that the successful way for a manufacturer to enlarge his business and become great was by using men to distribute his wares who understood distribution, believing that no man can successfully produce and distribute too. While the manufacturer understands the business details of manufacturing, the jobber is a necessity for profitable distribution.



JOHN C. KOCH, First Vice-President.

INTERDEPENDENCE OF MANUFACTURER AND JOBBER.

The relation between manufacturer and jobber should be cordial, his belief being that they were copartners in a measure. With interests alike, they should exchange views for the common good. If the merchant succeeds he can pay his bills, and so encourage the further production of goods. That the organization of jobbers can and does assist manufacturers a great deal was evident.

IMPORTANCE OF JUDICIOUS ADVERTISING

Mr. Goodell also dwelt on the importance of the manufacturers advertising, so that the trade may know the superior merits of the advertisers' goods, instancing how his own concern had succeeded in producing and marketing a new line by vigorous advertising.

The Market Outlook for Next Year.

The Thursday evening session was thrown open to the manufacturers, their representatives and the members of the press, a large number availing themselves of the invitation to be present. The first collocution was on the subject: "Outlook for the approaching year: will present range of prices probably prevail?"

Papers were read by Frank Dickerson, general sales agent of the American Tin Plate Company, and J. C. Brainard, sales manager of the Johnson & Jennings Company. These papers were printed in full in the last issue of *The Iron Age*. It was expected that Henry R. Towne, president of the Yale & Towne Mfg. Company, would also read a paper, but he was unable to attend the convention.

Greeting from the Manufacturers' Association.

Fayette R. Plumb, president of the newly formed American Hardware Manufacturers' Association, was introduced as a fraternal delegate from that organization and made the following address:

Members of the National Hardware Association: I come before you to-night as the representative of the American Hardware Manufacturers' Association to extend greetings of that organization, formed to-day and which will be perfected in the near future.

It is our desire to include in its membership all manufacturers who seek you as distributers, with the distinct understanding that manufacturers only are eligible, as we wish to eliminate any misunderstanding with your association. We are not in line, as you know, for membership in your company, and we think it only fair that we exclude all who claim membership here.

The manufacturers of Hardware have been very slow in these progressive days to assume that there was any necessity for concerted action, but recent developments in Iron and Steel have shown them that if they are anxious to correct errors in their own business the time has now arrived for concentration.

We recognize, of course, our relation with the wholesale Hardware jobbers and know that we must look to them to distribute our wares and, therefore, how necessary it is for us to work in harmony with them. Our efforts, then, will naturally be conducted along such lines as will meet with the approval of those whose interests are mutual.

We think you will agree with us when we say that unless there is perfect harmony between the two associations neither of them can exist. We shall, therefore, look for co-operation and assistance in correcting any evils which may be presented.

During the last six years most of us have thought it necessary to attend your annual meetings, and while you were in executive session, which was the greater portion of the time, we have been compelled to seek amusement as best we could awaiting the termination of each session. It has, therefore, occurred to us that we could not select a better time than the dates of your meetings for our annual convention. We shall thus be in a position to entertain any suggestions you may have to make for the general betterment of our mutual interests. I feel confident we shall have your cordial support and, therefore, predict a long life for the American Hardware Manufacturers' Association.

Trade Papers.

The second collocution was on "Trade papers; their relation to jobbing interests."

It was discussed by R. R. Williams of *The Iron Age*, Daniel Stern of *American Artisan* and A. E. Bolles of *Hardware*. A large audience gave close attention to the various views presented, indicating the interest with which the subjects under consideration were regarded.

MANUFACTURERS AT CLEVELAND MEETING.

American Axe & Tool Company, New York: S. W. Baker, R. E. Gray.
American Can Company, New York: C. P. Draper, Chas. Stollberg.
American Screw Company, Providence, R. I.: J. A. Nealey, Henry A. Taylor, W. H. Prytz.
American Steel Hoop Company, Pittsburgh: J. W. Brainard.
American Steel & Wire Company, New York: W. P. Palmer, A. T. DeForest, C. A. Merriman, T. H. Taylor, T. B. Coles, H. T. Pratt, George D. Kirkham, Robert Ney, J. H. Early, A. B. Manship, Stephen W. Tener, Stewart Chisholm, H. D. Pratt, Wm. P. Bissell.
American Tin Plate Company, New York: Frank Dickerson, E. H. Brooks.
American Wringer Company, New York: Geo. Reuter, Jr., R. B. Munn, James Richens, R. N. Tufford.
Atha Tool Company, Newark, N. J.: Jos. B. Weed, Edward Ingalls, Edward F. Ross.
E. C. Atkins & Co., Indianapolis, Ind.: N. A. Gladding.
Atlas Bolt & Screw Company, Cleveland: C. R. Harbaugh, J. F. Harrison, F. C. Young.
Avery Stamping Company, Cleveland: Henry W. Avery, George H. Lloyd.
L. M. Avery & Co., Chicago; L. M. Avery.
U. Baird Machinery Company, Pittsburgh: John L. McCartney.
G. & H. Barnett Company, Philadelphia: Alfred W. Barnett, Tom Almgill, Jos. M. Hottel.
Berger Mfg. Company, Canton, Ohio; S. Y. Buckman, Ed. Langbach.
Biddle Purchasing Company, New York: Wm. C. Biddle.
Billings-Chapin Company, Cleveland: N. D. Chapin.
L. F. Blue, Marysville, Ohio.

Arthur Brittan & Co., Chicago: Arthur Brittan.
Brittan & Mathes Company, Pittsburgh: Arthur Brittan.
Bronson-Walton Company, Cleveland: A. E. Bronson.
Brown, Hinman & Huntington Company, Columbus, Ohio: J. L. Evans.
Brown Hoisting Machinery Company, Cleveland: F. G. Tallman.
Bryden Horse Shoe Company, Catasauqua, Pa.: Oliver Williams.
R. K. Carter & Co., New York: R. K. Carter.
Chamberlin Cartridge & Target Company, Cleveland: Paul North.
Champion Steel Range Company, Cleveland: C. H. Miller.
Wm. Chisholm & Sons, Cleveland; H. A. Chisholm.
Clendenin Bros., Baltimore: Geo. H. Harper.
Cleveland Bolt & Mfg Company, Cleveland: W. C. North.
Cleveland Cap Screw Company, Cleveland: D. J. Kurtz.
Cleveland Facing Mills, Cleveland: J. D. Smith.
Cleveland Foundry Company, Cleveland: F. R. Beckwith.
Cleveland Hardware Company, Cleveland: Chas. E. Adams, Thos. P. Robbins, W. F. Gibbons, O. T. Saunderson.
Cleveland Stamping & Tool Company, Cleveland: Hopkin Williams.
Cleveland Stone Company, Cleveland: H. W. Caldwell, T. A. Giberson.
Cleveland Tack Works, Cleveland: W. C. Ross.
Cleveland Twist Drill Company, Cleveland: J. D. Cox, E. G. Buckwell, H. G. Smith.
Cleveland Varnish Company, Cleveland: George Kennard, J. W. Hayward.
Cleveland Wire Spring Company, Cleveland: E. S. Gage.
Clinton Wire Cloth Company, Clinton, Mass.: C. F. Fairbanks, Jr., Wm. H. Howard, Walter H. Howard.
Clyde Cutlery Company, Clyde, Ohio: R. B. Jones.
Columbia Lighting Company, Cleveland: Chas. Patterson.
Columbian Hardware Company, Cleveland: Wm. M. Powell, C. T. Stork, A. A. Fonda.
George Cooper & Co., Cleveland; I. C. Cooper, C. M. Gillett.
P. & F. Corbin, New Britain, Conn.: Chas. M. Jarvis, Chas. H. Parsons, W. E. Bartholomew, Geo. L. Haven, Geo. A. Overton.
Corbin Cabinet Lock Company, New Britain, Conn.: Geo. W. Corbin, Geo. F. Taylor, D. O. Macquarrie.
Cronk & Carrier Mfg. Company, Elmira, N. Y.; C. F. Carrier.
Deming Company, Salem, Ohio: Wm. Deming.
A. E. Dietz Company, New York: C. F. Fernald.
Dille & McGuire Mfg. Company, Richmond, Ind.: E. W. McGuire, Arthur Brittan.
Henry Disston & Sons, Philadelphia; Samuel Disston, Geo. W. Koon.
Dominion Wire Mfg. Company, Montreal: Albert E. Hanna.
S. R. Droessler, New York: S. R. Droessler.
Dupont de Nemours Company, Wilmington, Del.: R. S. Waddell.
Eagle Lock Company, New York: H. B. Plumb, P. D. Ford, G. W. Carter.
Eberhard Mfg. Company, Cleveland: W. P. Champney, Milford Lewis, Geo. B. Shepard, F. F. Conner, Chas. F. Reynolds, Wm. Austin.
Enterprise Mfg. Company, Philadelphia: Frank Wiswell.
Ferrosteel Company, Cleveland: W. M. Powell.
Garland Chain Company, Pittsburgh: Robert Garland.
Garry Iron & Steel Company, Cleveland: C. S. Bigsby, G. E. Needham, E. C. Powers, F. Z. Weadon, G. C. Duschel, B. F. Powers.
Geuder & Paeschke Mfg. Company, Milwaukee, Wis.: Wm. Brunow, T. A. Musgrove.
Geneva Tool Company, Geneva, Ohio: E. M. Converse.
Gibson & Price Company, Cleveland.
Gilbert & Bennett Mfg. Company, New York and Chicago: Saml. J. Miller, Charles J. Miller.
Goodell Company, Antrim, N. H.: Hon. D. H. Goodell, Richard C. Goodell, G. W. Hodges.
Grafton Stove Company, Grafton, Ohio: J. H. Faxton.
Hamilton Rifle Company, Plymouth, Mich.: Williston B. Penfield.
Hazard Powder Company, New York; R. S. Waddell.
W. C. Heimbuecher & Co., Chicago: W. C. Heimbuecher.
Hero Fruit Jar Company, Philadelphia: John L. Chapman.
Hopkins & Allen Arms Company, Norwich, Conn.: Frank M. Tobin.
Horton Mfg. Company, Ft. Wayne, Ind.: C. Marcey.
Hussey, Binns & Co., Pittsburgh: R. H. Binns, Geo. V. Willson.
Independent Register Company, Cleveland: E. C. Fox.
Independent Stone Company, Cleveland: D. J. Kurtz.
International Metal Lath Company, Niles, Ohio: F. E. Corey.
Iowa Farming Tool Company, Fort Madison, Iowa: F. S. Kretsinger.
Iron City Tool Works, Pittsburgh: William H. Hays.
Iwan Brothers, Streator, Ill.: W. L. Iwan.
Jenkins & Hardy, Toronto, Canada: James Hardy.
O. T. Jenks Lumber Company, Cleveland: Owen T. Jenks.
Iver Johnson's Arms & Cycle Works, Fitchburg, Mass.; Fred. I. Johnson, G. F. Salisbury, Thomas Ellis.
Johnston & Jennings Company, Cleveland; N. S. Calhoun, J. C. Brainard.
Jones & Laughlins, Cleveland: F. A. Pope, F. M. Campbell, Wm. F. Bonnell.
Kelly Axe Mfg. Company, Alexandria, Ind.: James Kelly.
Kirk-Latty Mfg. Company, Cleveland: W. T. Kirk, S. D. Latty, William Bates, Norton T. Jones, Karl Hodge.
F. E. Kohler & Co., Canton, Ohio: F. E. Kohler.
Lake Erie Iron Company, Cleveland: C. W. Scofield, Frank W. Davis, John T. Rowntree, Edgar C. Neal.
Landers, Frary & Clark, New Britain, Conn.; Geo. M. Landers.
Lamson-Sessions Company, Cleveland; H. C. Holt, Jno. G. Jennings, F. C. Case, Geo. M. North.
Lovell Mfg. Company, Erie, Pa.; A. W. Walker, Charles A. Meacham.
Lufkin Rule Company, Saginaw, Mich.: Fred. Buck, Theo. Huss.
McCaffrey File Company, Philadelphia: Joseph J. McCaffrey.
McKinney Mfg. Company, Allegheny, Pa.: J. P. McKinney, C. M. King.
Mann Edge Tool Company, Lewiston, Pa.: Robt. Mann, Jr.
Mechanical Rubber Company, Cleveland: Chas. E. Waelde, R. S. Pearce.
Metal Goods Mfg. Company, Cleveland: S. D. Latty, Wm. Bates.
Michigan Barrel Company, Grand Rapids, Mich.: Arthur Brittan.
Chas. Millar & Son Company, Utica, N. Y.: Henry W. Millar.
Chas. Morrill, New York: Julian A. Hurdle.
Mound City Paint & Color Company, St. Louis: Geo. B. Lowe.
H. M. Myers Company, Beaver Falls, Pa.: C. S. Hubbard.
National Enameling & Stamping Company, New York; E. C. Brandt, Albert Johnson.
National Lead Company, Cleveland: C. C. Foerstner, C. E. Lindsley, W. T. Robbins, W. P. Shook, W. W. Johnston, W. H. Locke.
National Mfg. Company, Cleveland: S. Werntz.
National Screw & Tack Company, Cleveland; W. B. D. Alexander, C. W. Brainerd, C. H. Palmer, J. E. Williams, S. Werntz.
National Sewing Machine Company, Belvidere, Ill.: Henry W. Darling.
National Snath Company, Erie, Pa.: H. P. Sullivan.
National Sweeper Company, Marion, Ind.: T. H. Bedell.
Edgar C. Neal, Buffalo, N. Y.
Nicholson File Company, Providence, R. I.: E. D. Fisk.
North Wayne Tool Company, Hallowell, Maine: H. S. Earle.
Norton Tool Company, Cleveland: W. T. Norton, W. E. Greene.
S. Obermayer Company, Cincinnati: E. D. Frohman.
Ohio Sash & Door Company, Cleveland: J. J. Wemple.
Ohio Tool Company, Columbus, Ohio: Wm. G. Miller.
Ohio Wringer Company, Springfield, Ohio: E. H. Gager.
Oliver Ames & Sons Corporation, North Easton, Mass.: Arthur Brittan.
Oliver Brothers, New York: T. E. Oliver.
Oliver Iron & Steel Company, Pittsburgh: John C. Oliver, Henry B. Lupton.
Oneida Community, Kenwood, N. Y.: Stephen R. Leonard, G. N. Allen.
Osborn Mfg. Company, Cleveland: F. G. Smith, H. R. Atwater, W. H. Moulton, E. E. Streich.
Otis, Bonnell & Co., Cleveland: F. A. Pope, Wm. F. Bonnell.
Otsego Fork Mills Company, Girard, Pa.: F. L. Andrews.
Parish & Bingham Company, Cleveland: P. S. Kennard, N. E. Parish.
J. C. Pearson Company, Boston: W. G. Aborn.
Chas. Parker Company, Meriden, Conn.: Frederick Pease.
Peck, Stow & Wilcox Company, New York and Cleveland: A. R. Treadway, L. H. Treadway, F. G. Wooster, T. H. Gossett.
Peters Cartridge Company, Cincinnati: J. S. French, T. H. Keller.
A. J. Phillips Company, Fenton, Mich.: Winfield D. Phillips.
Pike Mfg. Company, Pike Station, N. H.: E. Warren Smith.
Pittsburgh Steel Company, Pittsburgh: Edward Reitz, Wm. C. Reitz.
Fayette R. Plumb, Incorporated, Philadelphia: Fayette R. Plumb, William R. Howell, John J. Teeple.
Pressed Steel Rake Company, Buffalo, N. Y.: George S. Kellogg.
Reading Hardware Company, Reading, Pa.: J. E. Harbster, H. E. England, G. N. Jacobi, T. B. Hendrickson, Fred. L. Stellwagen, W. H. Bennett, Orton Hill.
Republic Iron & Steel Company, Cleveland: George D. Evans.
Reynolds Wire Company, Dixon, Ill.: H. G. Reynolds, E. E. Reynolds.
John A. Roebling's Sons Company, New York: A. B. Conover.
Rome Brass & Copper Company, Rome, N. Y.: Geo. W. Turney.
Rome Mfg. Company, Rome, N. Y.: Geo. W. Turney.
Russell & Erwin Mfg. Company, New York; George J. Laighton, B. A. Hawley, J. H. Van Newkirk, W. P. Hudson, C. A. Earl, T. J. Usher.
Sargent & Co., New York: Thomas J. Atkins, Edward P. Dunning, Charles A. Upham.
St. Louis Shovel Company, St. Louis: Walter William Birge, S. S. Gould.
Schneider & Trenkamp Company, Cleveland: Paul Schneider.
Wm. Schollhorn Company, New Haven, Conn.; Frank J. Schollhorn.
O. P. Schriver & Co., Cincinnati: O. P. Schriver.
Peter Scott & Co., Cincinnati; J. S. French.
Seneca Chain Company, Kent, Ohio: Henry R. Sheridan.
Sharon Steel Company, Sharon, Pa.: Edward H. Ward.
Sherwin-Williams Company, Cleveland; D. E. Fisher, J. H. Vance.
Simonds Mfg. Company, Fitchburg, Mass., and Chicago: Daniel Simonds, C. F. Braffett.
Smith & Hemenway Company, New York: F. P. Tenney.
Standard Chain Company, Pittsburgh: John C. Schmidt, Robert Garland, J. E. Pumphrey, Frederick D. Mitchell.
Standard Horse Nail Company, New Brighton, Pa.: Fred. S. Merrick.
Standard Register Company, Cleveland: F. R. Beckwith.
Standard Tool Company, Cleveland: H. A. Higgins, R. T. Lane, H. C. McKean, F. T. McGuire, J. A. Fuller, John T. Rowntree, Chas. P. King.

Stanley Rule & Level Company, New Britain, Conn.: A. W. Stanley, R. N. Peck.
Stanley Works, New Britain, Conn.: L. H. Pease, D. B. Woodbury.
J. Stevens Arms & Tool Company, Chicopee Falls, Mass.: F. E. Muzzy, A. H. Griffin.
Stowell Mfg. & Foundry Company, South Milwaukee, Wis.: Chas. E. Sammond, A. W. Wagner.
H. C. Tack Company, Cleveland: A. E. Convers, C. C. Paine, J. W. Hamilton.
Taylor & Boggis Foundry Company, Cleveland: R. H. Boggis, C. J. Morgan, H. E. Doty, Benj. Wade.
Tower Mfg. Company, Cincinnati: H. A. Weeks.
Tower & Lyon, New York; John J. Tower, Wm. H. Cole, Charles S. Gallagher, D. W. Patten.
Townley Metal Company, Kansas City, Mo.: Geo. E. Garland.
E. K. Tyron, Jr., & Co., Philadelphia: Chas. Z. Tyron.
Union Steel Company, Pittsburgh: W. W. Hutcheson.
Union Steel Screw Company, Cleveland: S. Sickels, N. D. Pratt.
Upson Nut Company, Cleveland: A. S. Upson, O. A. Austin, W. F. McKenzie.
Utica Pipe Foundry Company, Utica, N. Y.: Henry W. Millar.
Van Wagoner Company, Cleveland: Cornelius S. Van Wagoner.
Vulcanus Forging Company, Cleveland; A. G. Hathaway.
Wabash Screen Door Company, Rhinelander, Wis., and Memphis, Tenn.: Edward M. Kemp, Henry A. Rumsey.
Wadsworth-Howland Company, Chicago: W. A. Campbell.
Wallingford Mfg. Company, Wallingford, Vt.: H. B. Barden.
J. D. Warren Mfg. Company, Chicago: J. D. Warren.
Wiebusch & Hilger, New York: E. G. Smythe.
Wilcox Mfg. Company, Aurora, Ill.: D. W. Simpson, L. R. Simpson.
Willoughby Fork & Mfg. Company, Willoughby, Ohio; Thos. H. Jopling, R. M. Bond.
Winchester Repeating Arms Company, New Haven, Conn.; Irby Bennett, F. E. Stoddard.
Withington & Cooley Mfg. Company, Jackson, Mich.; Gen. W. H. Withington.
Wright & Colton Wire Cloth Company, Worcester, Mass.: James J. Collins, Mr. Searles.
Yale & Towne Mfg. Company, New York: L. H. Pigott, E. E. Magovern.
Hardware, New York: A. P. Mitchell, A. E. Bolles.
Stoves and Hardware Reporter, St. Louis: J. W. Bowman.
American Artisan, Chicago: Daniel Stern, S. P. Johnson.
Age of Steel, St. Louis: Sidney R. Lewis.
The Iron Age, New York and Chicago: Ezra S. Adams, R. R. Williams, H. H. Roberts, S. G. Hobson, H. M. Williams.

Election of Officers.

At the session on Friday morning the following officers were elected for the ensuing year:

PRESIDENT:

R. A. Kirk, Farwell, Ozmun, Kirk & Co., St. Paul, Minn.

FIRST VICE PRESIDENT:

John C. Koch, John Pritzlaff Hardware Company, Milwaukee, Wis.

SECOND VICE-PRESIDENT:

Brace Hayden, Dunham, Carrigan & Hayden Company, San Francisco, Cal.

SECRETARY-TREASURER:

T. James Fernley, Philadelphia, Pa.

W. S. Wright of Rector & Wilhelmy Company, Omaha, Neb., and Col. R. M. Dudley of Gray & Dudley Hardware Company, Nashville, Tenn., were chosen members of the Executive Committee; the other members being as follows: Samuel A. Bigelow, Bigelow & Dowse Company, Boston, Mass.; W. R. Belknap, W. B. Belknap & Co., Louisville, Ky.; P. E. Strauss, Fitz, Dana & Co., Boston, Mass.; J. D. Moore, Moore & Handley Hardware Company, Birmingham, Ala.

The Advisory Board, consisting of past presidents of the association, is now as follows: William W. Supplee, Supplee Hardware Company, Philadelphia, Pa.; H. H. Bishop, McIntosh-Huntington Company, Cleveland, Ohio; John Bindley, Bindley Hardware Company, Pittsburgh, Pa.; Richard W. Shapleigh, Norvell-Shapleigh Hardware Company, St. Louis, Mo.

New Orleans in 1902.

It was decided to hold the eighth annual convention in New Orleans, La.

Installation of New Officers.

A very pleasant feature of the convention was the installation of the new officers, which took place on Friday afternoon, the meeting being thrown open to all. There was a large gathering, including a number of ladies. The persons chosen to official position were introduced to the convention by Mr. Shapleigh and made brief addresses. The following are the remarks of President Kirk, who was received with much enthusiasm:

President Kirk's Address.

I need hardly refer in your presence to my reluctance in accepting this very honorable office with which you have intrusted me. I could not think for a moment of taking on me the labor and responsibility of the office if I did not feel assured of the hearty support that I may depend upon receiving from the members of this association, including our very strong Executive Committee. One of the most gratifying features in our association has been the devotion which has been shown by its members, and especially on the part of those who have been intrusted with the administration of its affairs. This interest has been manifested in a remarkable degree by those who have filled the offices of president and vice-president during our existence. As illustration of this we may note that every president of the association from the beginning is here before us to-day, and has given his time and labor to the work of the association during this entire week. Among this number of devoted men I desire particularly to refer to W. W. Supplee of Philadelphia, to whom more than to any other member of this association are we indebted for our success. In the hour of bereavement which he has been called on to pass through during this year in the loss of his noble son I am sure that he has been greatly sustained by the assurance of the deep sympathy of every member of our association.

In the work of our association there are three fundamental principles on which our policy and our labors are aligned. First, that Hardware goods shall be sold through the jobber. We maintain that the manufacturers' interests are promoted by this recognition of the jobber as the proper channel for the disposition of his goods; that in this distribution the jobber can advantageously collect the goods in the vast number of lines that he carries; that he can make better assortment of goods for the wants of his customers, and that he can secure better rates of freight through car lot shipments than the manufacturer can do in shipping small quantities, and generally, too, at long distances; also that in the expense account of salesmen he can reduce the cost of selling goods greatly under the expense that must be incurred by the individual manufacturer who solicits the trade of the retail dealer. We are pleased to note the growing disposition of the manufacturers to place their goods in the hands of the jobber for distribution.

Our second fundamental principle is one that necessarily follows from our first proposition; that in marketing his goods through the jobber the manufacturer shall recognize a proper differential in price, and that he do not sell his goods to the retail trade at the same price that he offers to the wholesale dealers. We do not assume to fix the price at which the manufacturer shall sell his goods. That is left to him to do. He is the one to judge what his goods cost, both to manufacture and to sell, and it is his province to fix the price.

But in making his price we ask him to establish a differential jobbers' price, and that he do not sell to the retail dealer at this price. We maintain that no manufacturer can afford to sell his goods to the retail dealer at the price at which he can sell to the jobber in so far merely as the selling of the goods is concerned, and also that in trying to do this he thereby introduces elements that tend greatly to the demoralization of the trade. Our position, further, which we believe to be unassailable, is that this course is best not only for the manufacturer and the jobber, but that it is also best for the retail dealer.

On these points we are not at this time presenting arguments. We are stating briefly the ground on which we as jobbers and members of this association stand.

These two fundamental propositions belong to the external work of the association. In this work we are brought directly into relations with the great body of manufacturers throughout the country. It is most gratifying to note the progress that has been made in this di-

rection in the seven years of our existence. The spirit that has been manifested by the manufacturers toward us, with scarcely an exception, has been most commendable, and our progress has been equally encouraging. The attendance of the manufacturers at our meetings in the past has been very gratifying, and we see with great pleasure the organization of manufacturers that has been formed here in Cleveland during our present meeting. We are confident that this movement promises still closer and mutually more profitable relations between the manufacturers and our association.

Our third fundamental line of work is internal and concerns our methods of business in our respective houses. It relates to the expenses of doing business, demoralization of prices and everything else that affects the internal economy of our houses. We realize that we have been doing business in many respects at too heavy cost, that we have been selling too many goods at prices that did not pay for doing the business, and that there are many other vicious practices that we must weed out.

We are working on these lines and are making it our special object to promote good feeling and greater confidence among ourselves, and also in cultivating right relations with manufacturers and the retail dealers, realizing deeply that in this way we can help to secure substantial benefits, not only for ourselves, but also for all interests that are connected with us. We have succeeded during these years even beyond our expectations, and the future looks most inviting to us. We anticipate that when we shall meet in the Queen City of the South one year hence, we shall come to that meeting feeling that another year's good work has been done.

Souvenirs.

Among the souvenirs distributed at the convention by the visiting manufacturers were the following:

AMERICAN WRINGER COMPANY, New York. Miniature Wringer.
STANDARD TOOL COMPANY, Cleveland, Ohio. Rubber Pen Holder in shape of Twist Drill.
E. C. ATKINS & CO., Indianapolis, Ind. Silver Pencil Sharpener.
CLEVELAND TWIST DRILL COMPANY, Cleveland, Ohio. Gold plated Pin bearing their trade-mark, with miniature Drill hanging from it.
PETERS CARTRIDGE COMPANY, Cincinnati, Ohio. Paper Weight made of Cartridges and Shell.
CHAMPION STEEL RANGE COMPANY, Cleveland, Ohio. Enameled Cigar Ash Tray.
FAYETTE R. PLUMB, Philadelphia, Pa. Nickel plated Hammer for Paper Weight.
TOWER MFG. COMPANY, Cincinnati, Ohio. Glass barrel of Tacks and Rivets.
LUFKIN RULE COMPANY, Saginaw, Mich. Five-foot Pocket Tape Measure.
LAKE ERIE IRON COMPANY, Cleveland, Ohio. Photograph of President McKinley.
LOVELL MFG. COMPANY, Erie, Pa. Gold plated Anchor.
DOVER MFG. COMPANY, Canal Dover, Ohio. Miniature Sad Iron.
G. & H. BARNETT COMPANY, Philadelphia. Nail File.
NATIONAL SWEEPER COMPANY, Marion, Ind. Carpet Sweeper.
READING HARDWARE COMPANY, Reading, Pa. Handsomely mounted Clock.

CONVENTION NOTES.

J. D. Cox of the Cleveland Twist Drill Company returned a few days before the convention from a four months' trip abroad, which was devoted principally to recreation and pleasure. As a careful student of manufacturing methods and trade questions in their broader relations, Mr. Cox naturally was a constant observer of existing conditions and tendencies. Among other features of the industrial movement abroad the great development of Germany was impressed upon him and the diminishing importance of England's production and trade.

Among the new faces noticed was that of J. B. Silliman of the Blish, Mize, Silliman Hardware Company, Atchison, Kan. Mr. Silliman is an able after dinner speaker, and his popularity gave him ample opportunity for the display of his talent in this direction.

An amusing incident occurred at the meeting of manufacturers for the purpose of forming an association, which was held while the jobbers were in one of their executive sessions, from which manufacturers and outsiders are carefully excluded. A jobber, mistaking the place of meeting, came in where the manufacturers were assembled. Quickly realizing the situation he was preparing to leave the room when a facetious manufacturer in loud tones bade him "Get out!" creating a hearty laugh as the disconcerted jobber beat a hasty retreat.

One of the most impressive scenes at the convention was in connection with the reference made by President Shapleigh to those who had died during the year. The number was unusually large, including many names of men who have been prominent in the trade and in the working of the association. While there was no eulogy or detailed account of the career of those who had passed away, the hush that fell upon the assembly as, standing in silence, they listened to the names of their former associates, and the tears that came into many eyes were more impressive than a formal tribute.

J. D. Warren, president J. D. Warren Mfg. Company, Chicago, Ill., manufacturers of Hardware Shelving, was a conspicuous attendant at the convention. Mr. Warren was kept busy explaining the new things in the way of Hardware Shelving and Fixtures which his company are placing on the market.

The Hardware and Manufacturers' Club of Chicago evidently did not altogether believe that f.o.b. cars constituted the entire fulfillment of their contract with the jobbers who were their guests in Chicago prior to their departure for Cleveland. Before the train bearing the delegation reached Cleveland W. H. Bennett, chairman of the Executive Committee, went through the train and provided all those belonging to the Chicago contingent with necessary carriage transportation from the depot to the Hollenden Hotel. There were over 100 in the party, and they made an impressive appearance as they drove up and alighted at the hotel.

Geo. W. Trout of Geo. W. Trout & Co., Chicago, was a faithful attendant at all the sessions. Mr. Trout is an exceedingly busy man, and as he explains it, it is not always feasible for him to secure time for conventions, and when he does secure the necessary time, he generally uses it to the best advantage.

Treasurer Sammond of the Stowell Mfg. & Foundry Company, Milwaukee, Wis., was unable to stay until the end of the convention, being compelled to leave Thursday evening. The interests of his company were well taken care of, however, by their Chicago representative, A. W. Wagner, who was in evidence throughout all the sessions.

The Standard Tool Company, manufacturers of Twist Drills and Machinists' Fine Tools, were noticeable among those who were prominent in the entertainment of the wholesale jobbers attending the convention. They invited a large number of the delegates to an enjoyable tallyho party, afterward entertaining them at their works. Their spacious new office was profusely decorated with palms and flowers, and the guests, who were provided with boutonnieres, unique souvenirs, &c., expressed themselves thoroughly pleased with the hospitality extended.

A number of visiting manufacturers were entertained on Thursday by the W. Bingham Company, who gave them a tally-ho drive. Stops were made at the Euclid Country Club and at the Roadside Club, where a luncheon was served. The return trip was made through Wade and Gordon parks, to the Union Club, where supper was served at six o'clock. All voted it a very enjoyable affair.

On Tuesday evening Charles C. Paine of the H. C. Tack Company gave an elaborate dinner at his residence, 367 Amesbury avenue, to the officers of the National Hardware Association. Those present were Richard W. Shapleigh, Brace Hayden, T. James Fernley, Samuel A. Bigelow, John Bindley and Albert E. Converse, a business associate of Mr. Paine.

Cleveland as a Hardware and Iron Center.

CLEVELAND, the seventh largest city in the United States and the metropolis of Ohio, occupies a unique position, for in addition to its great and rapidly growing coal and iron interests, its manufacturers produce a more diversified line of goods in the Hardware line than are made in any other American city. Cleveland is in a most prosperous condition. Its population has for years been increasing with an exceptional rapidity, and there is every prospect that this will continue owing to its unique geographical situation and the many advantages it possesses.

Cleveland's Advantages.

It is at the point where coal from the rich eastern deposits, and iron ore from the Lake Superior mines are naturally brought together. The best of transportation facilities both by rail and boat help materially to make it the important receiving, distributing and manufacturing center it is. The efforts of its progressive and wide-awake citizens to attract business and manufacturing enterprises, to improve the condition of the workingmen in the factories, and to make the city an important center cannot fail to stimulate its growth.

Growth in Population.

The village of Cleaveland, as it was originally spelled, was incorporated in 1814, when it had a population not exceeding 100 persons. In 15 years the population had increased tenfold. The growth since then has been almost phenomenal.

Naturally Cleveland and the whole Western reserve in which it was situated was developed by Connecticut and other New England people, who thus conspicuously shaped the destinies of the city, and still largely constitute the leading element. However much Cleveland's population has become enriched by wonderfully varied contributions, the characteristic New England progressive conservatism has plainly persisted. The city is one of the most typically northern in the country.

Cleveland in the early days was confined to the east side of the Cuyahoga River, but has since grown and covers a large territory on each side of it. It is along this river that the principal blast furnaces and ore piles are situated to which so much of the city's prosperity and growth may be attributed.

The population from 1860-1900 increased eightfold. The following table giving the population by decades is of interest as illustrating its steady and rapid growth:

1860	48,843
1870	92,825
1880	160,141
1890	261,253
1900	381,768

According to conservative estimates the present population is about 400,000. From a deduction by the mathematical law of growth by the "method of least squares" using the census figures, the million mark of population will be reached between 1920 and 1930.

According to the census reports Cleveland in 1870 was the fifteenth largest city in the United States; in 1880 the eleventh; in 1890 the tenth; in 1900 the seventh.

From 1890 to 1900 the population of Cleveland increased 46.07 per cent.

Banks.

There are 18 national banks in operation, having a combined capital of $12,983,700, and a surplus fund of $4,491,876. There are 23 savings banks and 12 trust companies in operation. The deposits in the national and savings banks exceed $151,000,000. The combined capital and surplus of national and savings banks exceeds $36,000,000. The exchanges at the United States Clearing House in the year 1900 aggregated $565,963,262, an increase over that of the preceding year of $47,324,495.

It is said that in the whole history of Cleveland banking there has not been a failure of importance. Although the bank clearances of Cleveland are not as heavy as those of other and even smaller cities, because of different methods, and that Cleveland is pre-eminently a manufacturing city, the figures are interesting, not as showing the actual volume of business done through the banks, but as simply showing the growth of the city, as the figures for the present year will undoubtedly be seven times those of 15 years ago.

Extent of the City.

Originally the city was but 1 mile square, now it has a lake frontage of nearly 10 miles, and an average width of 6 miles.

There are nearly 3000 streets in the city. At the beginning of 1900 there were 568½ miles. It is claimed that Cleveland has the widest streets of any city in the country. Superior street is 132 feet wide, Euclid avenue is 80 feet, Willson and Case avenues each 90 feet, the majority are from 60 to 66 feet wide.

Buildings.

Great modern buildings have arisen within the past few years at a remarkable rate, and as much of the future as can be foreseen reveals a rapid continuance of the process. There are many of the conspicuous steel structures of the sky scraper class on and near the central public square. Elegant arcade buildings provide

MAYOR TOM L. JOHNSON.

covered ways between Euclid avenue and Superior street and Euclid avenue and Prospect street. A cluster of modern steel buildings is arising around and near Association place, a growing secondary downtown business center. The actual value of Cleveland's buildings is placed at $236,000,000, against $150,000,000 ten years ago.

Manufacturing Sites.

Admirable locations for manufacturing establishments about Cleveland are almost limitless. This results from the level topography and the excellent railroad facilities to be encountered in any direction from the center of the city. There is abundant room along the lake shore, convenient to railroad facilities, and the valley of the Cuyahoga, for a long distance accessible to boats, offers space for many more factories than the many already occupying the "flats."

The phenomenal growth of Cleveland is not more strongly marked than the vigorous and rapid development of her suburbs. What were formerly separate and remote towns, villages, &c., have suddenly grown to such metropolitan proportions as to appear as extensions of the overgrown city. Superior trolley transportation has aided materially in the growth and popularity of the suburban districts.

The Iron Industry.

Cleveland as an iron ore market is the largest in the world. The enormous iron ore industry of Lake Supe-

rior and its distribution to the world are all centered in Cleveland, and represents an investment of nearly $200,000,000.

For the manufacture of iron and steel and their products Cleveland possesses great advantages. More than one-half the number of employees, nearly 50,000, are employed in this industry and its branches.

The following table shows the total shipments of iron ore from the Lake Superior district for several different years, the amount received in the Cleveland district and the percentage of the total output of the mines received in the Clevland district:

Lake Superior Iron Ore Product.

	Total shipments. Gross tons.	Received in Cleveland district.	Per cent. of total received in Cleveland district.
1880.....	1,908,745	1,057,577	55.40
1890.....	9,012,379	5,499,080	61.02
1895.....10,429,037		6,400,761	61.37
1897.....12,457,002		7,354,828	59.04
1900.....19,121,393		11,865,000	62.05

The amount of coal (chiefly bituminous) received and shipped in 1890 and 1900, told below, shows the large amount consumed in Cleveland, and the largely increased consumption in the last ten years:

	Coal received.	Coal shipped.
1890.....1,960,591		1,229,056
1900.....4,670,244		2,300,511

Cleveland ranks first in the production of vessels for the great lake system. During the last ten years the Cleveland shipbuilding yards turned out a greater tonnage than those of any other city in the country. During that time they completed 69 steam vessels, with a total tonnage of 194,080, against Philadelphia's 110 vessels, of 138,593 tons.

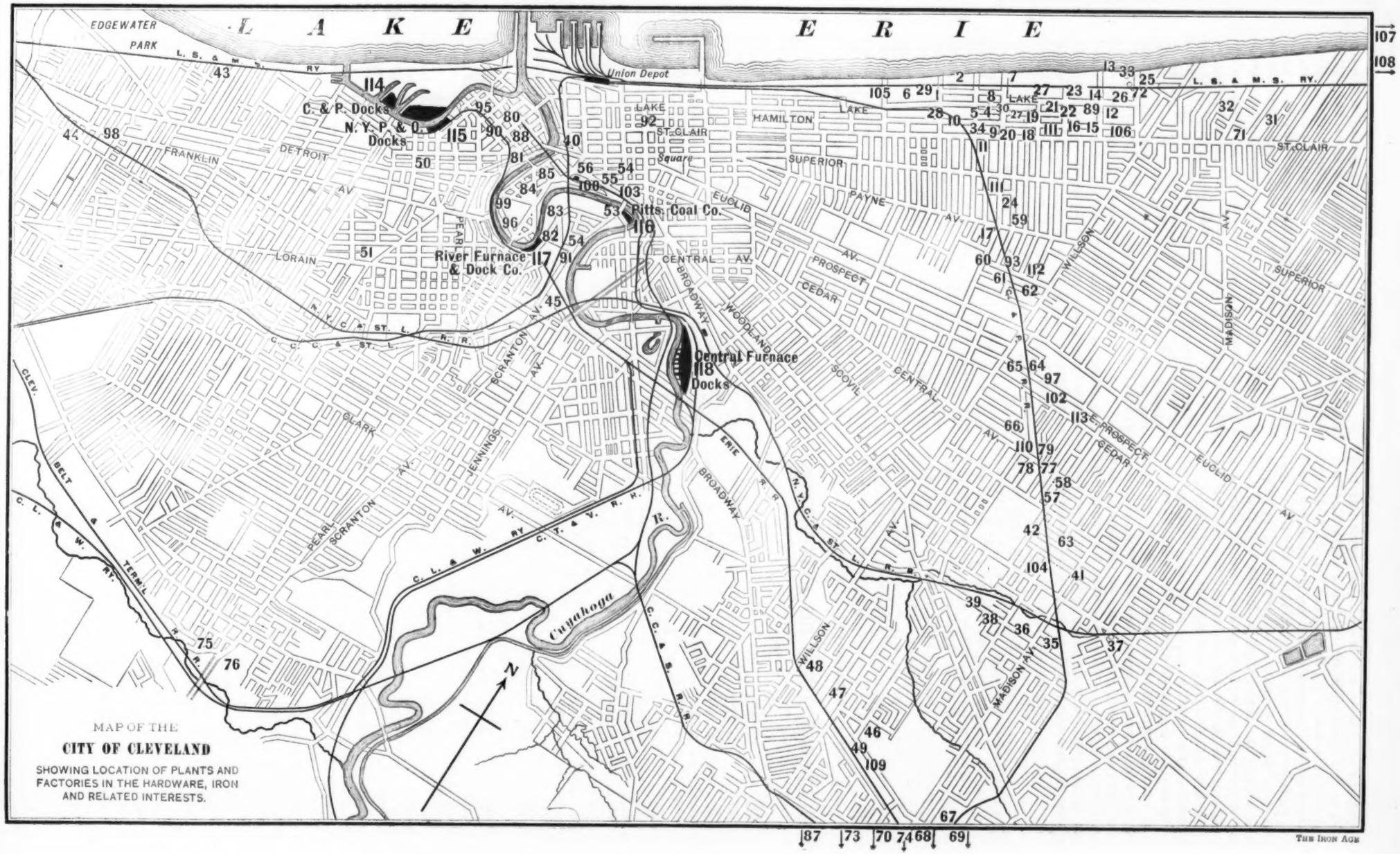
Manufacturing Interests.

The Federal census of 1890 reported 2307 manufacturing establishments, employing $77,949,925 capital and 50,674 persons; paying $65,645,649 for stock used and $28,355,505 for wages, and yielding products of an aggregate value of $113,240,115. The principal industries, according to the value of products, were the manufacture of iron and steel, $15,472,199; foundry and machine shop products, $11,832,334; refined petroleum, $10,583,501; packed meat, $4,810,993, and malt liquors, $3,011,555. Other important manufactures were clothing, flour and grist, lumber, planing mill products, publications, ships, paint, iron and steel forgings, railroad cars and bread and bakery products. Cleveland is an important center of the malleable iron trade, and surpasses all other lake ports in the building of iron and steel vessels.

In this great manufacturing center, with its vast and diversified interests, it is not feasible to attempt an enumeration of the interests in the Hardware and iron lines, ranging, as they do, from the raw material to products massive and minute in many diversified lines. In addition to its rolling mills, blast furnaces, foundries, machine shops, shipbuilding yards and other great plants, there are many factories constantly turning out Heavy and Shelf Hardware, Plumbers' Goods, Carriage Hardware, Tools, Stoves, Bicycles, Bolts, Automobiles, Electrical Machinery and Appliances, Street Cars, Brass and Copper Goods, Nails, Hoisting Apparatus, Sewing Machines, Shovels, Wire, Tacks, Screws, Machinists' Tools, Household Articles, Novelties and many other things. The various plants and factories in the Hardware, iron and related lines are indicated on the accompanying map, the numbers representing the location of the factories and works. The solid black spots indicate the location of the chief ore piles within the city. The numbers on the margin of the map indicate direction of plants beyond the limits shown. Following is the key to the numbers on the map:

Key to Map of Cleveland.

1 Otis Steel Company.
2 Cleveland Steel Company.
3 Atlas Bolt & Screw Company.
4 National Iron & Wire Company.
5 Vulcanus Forging Company.
6 Ajax Mfg. Company.
7 H. P. Nail Company.
8 City Forge & Iron Company.
9 Bardons & Oliver.
10 Cleveland Wire Spring Company.
11 Cleveland Crane & Car Company.
12 Cleveland Stamping & Tool Company.
13 Avery Stamping Company.
14 Garry Iron & Steel Company.
15 Columbian Hardware Company.
16 Cleveland Tack Company.
17 W. S. Tyler Company.
18 Acme Machinery Company.
19 Brown Hoisting Machinery Company.
20 City Foundry Company.
21 Kilby Mfg. Company.
22 Cleveland Twist Drill Company.
23 Chisholm & Moore Mfg. Company.
24 Chisholm Steel Shovel Works.
25 Fulton Foundry Company.
26 Frost Wire Fence Company.
27 Cleveland Hardware Company.
28 Patterson Foundry Company.
29 T. H. Brooks & Co.
30 Cleveland Punch & Shear Company.
31 King Bridge Company.
32 Lake Erie Iron Company.
33 American Steel & Wire Company.
34 Variety Iron Works.
35 Van Dorn Iron Works.
36 Van Dorn & Dutton.
37 Eberhard Mfg. Company.
38 Standard Foundry & Mfg. Company.
39 Standard Steel Range Company.
40 Champion Steel Range Company.
41 Cleveland Foundry Company.
42 Ohio Foundry Company.
43 Forest City Steel & Iron Company.
44 Kirk-Latty Mfg. Company.
45 Upson Nut Company.
46 Hoffman Hinge & Foundry Company.
47 Cleveland Steel Castings Company.
48 Interstate Foundry Company.
49 Cleveland Frog & Crossing Company.
50 Cleveland Steel Range Company.
51 Tinnerman Steel Range Company.
52 Peck, Stow & Wilcox Company.
53 Taylor & Boggis Foundry Company.
54 Ferrosteel Company.
55 Independent Register Company.
56 Electric Controller & Supply Company.
57 Standard Welding Company.
58 Wellman-Seaver Engineering Company.
59 Union Screw Company.
60 Schneider & Trenkamp Company.
61 Standard Lighting Company.
62 Dangler Stove & Mfg. Company.
63 National Screw & Tack Company.
64 Oster Mfg. Company.
65 Warner & Swasey.
66 Cleveland Machine Screw Company.
67 Empire Rolling Mill.
68 Champion Rivet Company.
69 Franke Steel Range Company.
70 Newburgh Wire Mill.
71 Consolidated Works.
72 American Works.
73 Newburgh Steel Works.
74 The Emma Furnace.
75 Fanner Mfg. Company.
76 Born Steel Range Company.
77 Standard Tool Company.
78 Co-operative Stove Company.
79 American Ball-Bearing Company.
80 Forest City Foundry & Mfg. Company.
81 Reliance Machine & Tool Company.
82 Riverside Foundry Company.
83 Maher Wheel & Foundry Company.
84 Palmer & De Mooy Foundry Company.
85 Bowler Foundry Company.
86 Osborn Mfg. Company.
87 Gartland Foundry Company.
88 Macbeth & Co.
89 Metal Goods Mfg. Company.
90 Bourne & Knowles Mfg. Company.
91 Lamson & Sessions Company.
92 Hart Mfg. Company.
93 Lucas Mfg. Company.
94 Farnan Brass Works.
95 Glauber Brass Mfg. Company.
96 U. S. Bronze & Brass Company.
97 Central Brass Mfg. Company.
98 Ohio Brass Mfg. Company.
99 John V. Kennedy.
100 Hunger & Scheidegger.
101 Cleveland Bronze & Brass Company.
102 Standard Sewing Machine Company.
103 White Sewing Machine Company.
104 National Malleable Iron Castings Company.
105 U. S. Cast Pipe & Mfg. Company.
106 Parish & Bingham.
107 Bronson, Walton Company.
108 Browning Engineering Company.
109 American Tin Plate Company.
110 American Ball Bearing Company.
111 Cleveland Galvanizing Works.
112 Winton Motor Company.
113 Baker Automobile Company.
114 C. & P. Docks.


L A K E E R I E
EDGEWATER PARK
L. S. & M. S. RY.
Union Depot
C. & P. Docks
N. Y. P. & O. Docks
River Furnace & Dock Co.
Pitts. Coal Co.
Central Furnace Docks
LAKE ST. CLAIR Square
HAMILTON
SUPERIOR
EUCLID
PAYNE AV.
CENTRAL AV.
PROSPECT
CEDAR
E. PROSPECT
WOODLAND
BROADWAY
SCRANTON AV.
JENNINGS
PEARL
FRANKLIN
DETROIT AV
LORAIN
CLARK AV.
WILLSON
MADISON
MADISON AV.
ERIE R. R.
N. Y. C. & ST. L. R. R.
C. C. C. & ST. L. R. R.
C. L. & W. RY.
C. T. & V. R. R.
C. C. & S. R. R.
CLEV. BELT & C. L. & W. RY. TERMI. R. R.
Cuyahoga R.
N
MAP OF THE
CITY OF CLEVELAND
SHOWING LOCATION OF PLANTS AND FACTORIES IN THE HARDWARE, IRON AND RELATED INTERESTS.

115 N. Y. P. & O. Docks.
116 Pittsburgh Coal Company.
117 River Furnace & Dock Company.
118 Central Furnace Docks.

Wholesale Houses.

In addition to these manufacturing establishments, whose products are sold in all parts of the country and in many a foreign land, there are in Cleveland a number of wholesale Hardware houses which rank among the most enterprising and successful in the country. An indication of their progressive spirit is seen in the fact that it was here that the National Hardware Association was formed, which has made for itself so honorable a place among trade organizations.

James H. Hoyt's Tribute.

The following eloquent description of Cleveland's facilities as a producer of goods in the Hardware and related trades was given by James H. Hoyt at a former meeting of the association:

The influence of Cleveland is not confined within her own borders, wide and extended as they are. She has made herself felt the world over. I have read the *Times* in London by the light of Cleveland oil. The enemies of England in the far corners of the globe have been shot down by bullets fired from a gun developed and owned by Cleveland capitalists. The dense fog of London is even now pierced by the radiant beams of an electric light invented by a distinguished citizen of Cleveland and first manufactured here, and the same illumines the brilliant boulevards of Paris and Vienna and glistens on the icy surface of the Neva. The rivet holes in the plating of the monster war ships of the navies of the world have been pierced by Twist Drills manufactured here, and the perspiring and patient Nubian, cultivating the lands made fertile by the overflow of the waters of the majestic Nile, wearies his jaws and makes his breath fragrant by the constant chewing of Cleveland gum. The secrets of the brilliant constellations of the far distant skies are discovered by the aid of Cleveland telescopes, and a modest astronomer resident here has made the name Cleveland known wherever learned men "look through Nature up to Nature's God." Wherever the glaring beams of the electric light penetrate carbons manufactured in Cleveland are used. Garments in remote places of the earth are made on Cleveland Sewing Machines. Tramways are run by Cleveland cable machinery and Cleveland electric motors. Houses in distant localities are builded with Cleveland Tools, made secure by Cleveland Wire Nails and Bolts, fitted with Cleveland Hardware, and are made beautiful by Cleveland Paint. Their hospitable doors swing upon Cleveland Hinges and are closed against intruders by Cleveland Springs, and the food served in them is made palatable by Cleveland salt, which never loses its savor; and cooking is made possible in the torrid regions of the equator by the use of Cleveland Oil and Vapor Stoves. Vessels are unloaded in distant harbors by Cleveland hoisting machinery. The nervous systems of far away barbarians are paralyzed with electric shocks caused by the fierce energy created by Cleveland dynamos. Cleveland ships not only carry the commerce of the great lakes, but plow the restless waters of the mighty ocean. Cleveland bridges span distant rivers, messages are flashed hundreds of miles over Cleveland wires, and trains, away West and South of us, rush onward over Cleveland rails.

Shipping Facilities.

Cleveland being situated in the midst of a great productive center is fortunate in possessing exceptional shipping facilities, which materially help in placing it in the foremost rank along with the other great commercial centers. The city has, according to the statements of the Cleveland Chamber of Commerce:

Eight rail and four lake routes to Chicago; two rail and one lake route to Detroit; three rail and one lake route to Buffalo; nine rail and six lake and rail routes to New York; six rail routes to Philadelphia; five rail routes to Pittsburgh; six rail routes to Cincinnati; thirteen rail routes to St. Louis.

Cleveland's railroads represent all the great systems of the Middle West. Between 140 and 150 trains enter or leave the Cleveland depots every day. About 75 miles of steam track lie within the city limits.

Cleveland has a lake frontage within the city limits of 8 miles and a river frontage of 16 miles, an improved public dock frontage of 2500 feet and an unimproved public dock frontage of 3000 feet. The famous Cuyahoga River is sufficiently deep to allow easy passage for the largest vessels up the river, in fact making a ship canal for Cleveland, with 16 miles of dockage front. Cleveland ranks as one of the most important lake ports. More lake tonnage is owned in the Cleveland district than in any other on the great lakes, or nearly 25 per cent. of the whole, and the vessels owned in Cleveland average much larger than at any other port on the lakes. The gross tonnage of Cleveland boats in 1874 was 78,859; in 1890 it was 193,322 tons; in 1900 it was 376,793 tons. Ten years ago Cleveland had 253 boats; in 1900 she had 326 boats.

In the fiscal year ending December 31, 1900, the imports of merchandise aggregated in value $1,498,086 and the exports $2,169,379. The entrances of shipping in the Cuyahoga district, of which Cleveland is the port of entry, during 1900 were 7560 vessels, with a total tonnage of 9,419,860; clearances, 7588 vessels, with a total tonnage of 9,488,454; the total number of vessels, 15,148; total tonnage 18,908,314.

The following table shows the total amount of freight received and forwarded during the year 1900, according to the statistics of the Cleveland Chamber of Commerce:

Articles.	Received.	Forwarded.
Anthracite Coal, tons	138,614	16,481
Bituminous Coal, tons	4,136,696	2,233,607
Coke, tons	394,934	51,552
Iron Ore, tons	3,823,314	2,986,856
Stone, Sand and Lime, tons	819,097	126,560
Petroleum, barrels	587,987	648,563
Pig, Bloom and Railroad Iron, tons.	464,468	206,560
Other Iron and Castings, tons	276,906	520,407
Lumber and other forest products, cars	44,278	11,234
Manufactures, tons	540,388	526,924
Cattle, head	123,552	33,572
Hogs, head	1,180,605	322,384
Sheep, head	186,822	18,645
Other Live Stock, head	15,945	1,733
Wheat, bushels	3,363,830	1,865,970
Corn, bushels	12,252,878	10,438,967
Oats, bushels	12,382,639	9,739,106
Barley, bushels	202,257	110,249
Rye and other Cereals, bushels	8,169	339,173
Agricultural Products, except Grain, tons	253,386	44,026
Flour and milling products, tons	118,272	59,921
Provisions, tons	114,583	49,297
Salt, tons	12,436	82,585
Merchandise and other articles, tons.	689,659	547,032
Total tonnage	13,701,988	8,394,013

IMPRESSIONS OF THE CLEVELAND MEETING.

BY OUR LONDON REPRESENTATIVE.

As one whose acquaintance with trade conventions has hitherto been confined principally to England, it may not prove uninteresting if I try to convey my impressions at the Cleveland convention. On the surface, what struck me most agreeably was the manifest opulence, good fellowship and vivacity of the general company assembled. It was good to see so many business men away on business, yet making of it a real pleasure, not to say a picnic. Manufacturers and jobbers opened their hearts to each other.

A TRUCE TO ORDER TAKING.

They both seemed to agree that this was the time to make friends; it was, I think, tacitly understood that "drumming for orders" (I hope I have the correct term) was, in English parlance, "bad form." I doubt if in any other country so many business men, with such intimate and mutual interests, could stay together for three or four days without opening their order books or drawing checks. This fact in itself points significantly to an American conception of business fundamentally unique. The delegates had met there, not to discuss their own private business details, but unitedly to feel their way to a system of trade politics; to discuss trade policy; to feel themselves in organic touch with their trade colleagues throughout the length and breadth of a great continent. It was an outward and visible exemplification of the old axiom that the whole is greater than the part; that it is only by the units conferring together that the trade, as a whole, can assert its rightful influence.

METALLIC DIGNITY.

Arising out of this new and modern conception of business, I noted a proud conviction that to be connected with the metal trades confers a dignity which other trades may emulate, but cannot under any circumstance equal. In England the cobbler is credited with the belief that "there is nothing like leather." In America the proverb must be changed: "There is nothing like Hardware." This feeling more than once found expression during the sessions at the conference.

IMPORTANCE OF THE METAL INDUSTRIES.

For example, the speakers who addressed themselves to the future prospects of trade more or less explicitly agreed that the state of the metal trade is the true barometer to the condition of trade generally in the United States. It is true that the results of the wheat and cotton crops were carefully noted, but the delegates seemed to think that these great natural products were mere accessories; that Iron and Steel, with its 10,000 variations, constituted the real backbone of the country's undoubted prosperity. This pride in one's own occupation may be slightly exaggerated; but it is a valuable asset, adding 50 per cent. to "good will." I think I have sometimes noted a disposition in European countries to be apologetic—as one would say: "It's not much of a business; but I'm in it, and must make the best of it." Not so the delegates at Cleveland. They were never on the defensive. I observed that many of them were young men who had succeeded to prosperous connections built up by their fathers before them.

ENGLISH ASPIRATION.

In England, too often, the son of a prosperous trader wants to become a lawyer, or a doctor, or a clergyman. For some inscrutable reason, these professions are more highly esteemed in England; they are regarded as more "respectable." I make little doubt that one of the reasons for the recent American trade expansion is that the young educated American is not ashamed "to talk shop" at college, and gladly follows in his father's business footsteps, instead of (as in England) joining the large army of briefless barristers and struggling doctors. Perhaps, however, I take too roseate a view of this particular American personal equation.

BUSINESS NOW A SCIENCE.

I was also greatly impressed with the scientific view of business adopted by so many of the speakers. Buying and selling, under the complex conditions of modern civilization, is veritably a science. I could see that most of those attending the convention were fully alive to this fact. It is difficult adequately to realize what a vast change is here indicated from the day, not so very far removed from us, when each man's business was just himself, reflecting his own weaknesses, imperfections and idiosyncrasies. The man and his business were almost interchangeable terms. But the mental attitude of the Cleveland delegates was rather that of being legatees of a delicate machine, which is quite separate and distinct from their own personalities—a complex mechanical contrivance, to operate which it is necessary to acquire science and skill. I noted this particularly in the little discussions, which took place in all sorts of odd corners, on the proposal to syndicate the jobbing trade. The exact bearings of this new problem were taken with as much skill and knowledge as a navigator exercises when taking his soundings near a treacherous shore. In short, so far as America is concerned, it is the day of the educated Hardwareman.

WHAT IS IT ALL LEADING TO?

I could not avoid asking myself the question: "Where is all this going to stop?" Here was the jobbing trade in busy consultation as to how best it can protect its interests and consolidate its position. As I gather, the manufacturers had previously met at the convention for exclusively social purposes. At Cleveland they formed their own association with every prospect for a prosperous future. Thus was opened up a vista of separate and joint sessions as between manufacturers and jobbers. But where does the retail trade come in? It would be presumptuous for a visitor to express any opinion, but I could not help feeling that in the nature of things the retailer is bound, in sheer self defense, to put in an appearance and express himself forcibly, just as the manufacturers and jobbers expect to do at New Orleans next year.

MANUFACTURER : JOBBER : RETAILER AT ONE ASSEMBLY.

If this should ever happen, what will be the result? If the manufacturers, jobbers and retailers should thus ever come together, is it not conceivable that many wonderful developments may take place? Instead of three days, the convention would more probably last a fortnight. And is it not quite possible that much buying and selling might take place and many contracts be ratified? It was by pursuing this train of, perhaps, idle thought that I began to figure the future Hardware convention being transformed into a gigantic annual mart—a sort of Hardware Nijni Novgorod. No man, least of all a stranger, can set rod and compass to trade developments; but this forecast seems to me, as an outside observer, to be the logic of the situation.

THE TEST OF TRADE DEPRESSION.

The meeting of the manufacturers contains elements of strength and purpose. Both publicly and privately, the opinion was expressed that, certainly for some years to come, the trade organization of the jobbers must continue to be the natural outlet for the manufacturers' products. At the same time more than one manufacturer told me that it was impossible accurately to define the true relation of the manufacturer to the jobber until both associations had passed through a period of trade depression. I may, perhaps, incidentally remark that herein may be an inherent weakness. I noticed that most of the business transacted was based on the assumption that prosperity is a permanent factor. Is it? In England, small though our experience has been, we have at least learned that the crucial test of any association is the success with which it carries itself in seasons of bad trade. It is one thing to associate on a rising market; it is quite another to keep the organization intact when prices are tumbling like an avalanche. It is to be hoped that both the manufacturers and jobbers will have commercial statesmen among them strong enough and persistent enough safely to steer their ships through troubled waters. For this reason alone the formation of a manufacturers' association is exceedingly timely. If it develops its full strength while trade is good, it will be the better prepared to meet and overcome the many obstacles that must inevitably block the path in days of adversity.

BROAD GAUGE BUSINESS ACUMEN.

Another point that forcibly struck me was the broad minded way in which the manufacturers met the minute yet necessarily irritating difficulties of widely differing interests. In England, when an association for manufacturers has been mooted, objection has always been taken that the common interests were small in proportion to the number of natural antagonisms. It remains to be proved to what extent this objection is valid. Personally, I think it is a bogy. Apart from the numerous questions which may properly be discussed between the two associations the manufacturers will have to consider the prospects of and the methods suitable to the growth of the export trade, while, doubtless, the eternal problem of capital and labor will come up in a hundred different guises.

THE SPIRIT OF GOOD FELLOWSHIP.

The visitor, whether from England or Timbuctoo, could not fail to be immensely gratified with the spirit of good fellowship and comradeship that prevailed throughout. Indeed, it grew day by day, so that by Friday everybody seemed to be swearing eternal friendship to everybody else. An instance of this came out in the naive admission made by the popular gentleman who was elected to the Advisory Board. In returning thanks, he remarked that he thought it was not due to any special aptitude for the work, but (with a broad and genial smile) he had been "put there by the boys for personal reasons." The convention laughed with delight. But may it not be said that this was, in effect, an official

recognition of the importance of the social side of the convention's proceedings?

ASSOCIATION IN BUSINESS.

I am conscious of yet another impression, which must conclude these discursive remarks. It was made manifest, times without number, that American business men have come to believe profoundly in the principle of association in business. As we all spend seven-tenths of our waking hours at our desks or in our warehouses, it is clear that this principle of association is bound to affect our lives in a multitude of ways. Thus it comes about that it is the business men of America who bid fair to realize the axiom of that great revolutionary, Joseph Mazzini. He says: "Association is the basis of civil society." Surely an excellent motto for the National Hardware Association.

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NEW ENGLAND HARDWARE DEALERS' ASSOCIATION.

THE regular monthly meeting and dinner of the New England Hardware Dealers' Association was held at the United States Hotel, Boston, Wednesday evening, October 9. About 60 members were present. Mayor Thomas N. Hart was their principal guest, and he made a very interesting address relative to Boston and its improvements during the past two years. Among the other speakers were James N. Frye, Charles A. Burditt, George S. Saunders and Anthony S. Morss, all of whom related reminiscences of their early Hardware experiences in or near Dock Square, Boston.

The association invited the following, who are the oldest Hardwaremen of Boston, to be present at this meeting, but the first four mentioned were unable to be present owing to their advanced age: Nathaniel B. Doggett, George T. Carter, George Allen, Martin L. Bradford, George S. Saunders, Charles A. Burditt and Daniel Goodnow. Music was furnished during the dinner by a trombone quartette from the Lynn Cadet Band, and the selections were much enjoyed.

PRICE-LISTS, CIRCULARS, &c.

THE MICHIGAN HARDWARE MFG. COMPANY, Grand Rapids, Mich.: Catalogue of Stove Boards, Sheet Metal Ceilings and the improved Gem Hose Plier. The company's new crystallized metal covered Stove Boards are manufactured with the edges on the underside of the base forced into the wood in such a manner as to avert all danger of projecting outward and becoming entangled with carpet or rugs or severing the covering of the base or wooden bottom. The catalogue illustrates a variety of the designs which have been originated by this company. The Metal Ceilings shown are also of original and pleasing designs. The Gem Hose Plier is designed for coupling and mending Garden Hose, and is a very ingenious tool, embodying a number of features which make it especially valuable in this line.

J. B. CARROLL, 36 La Salle street, Chicago: Circular, illustrated in colors, referring to the Hahn Acetylene Gas Burner. This circular gives a number of points of superiority possessed by this Burner, which have made it popular with the trade.

SIMMONS HARDWARE COMPANY, St. Louis, Mo.: Catalogue No. 403, 370 pages, relating to Clocks and Art Goods, Sterling Silver, Silver Plated Ware, Cut Glass and Cutlery.

BARNEY & BERRY, Springfield, Mass.: Ice Skates. A new 48-page catalogue shows a very complete line of Ice Skates, and includes two new styles of medium priced Hockey Skates, Tubular Racer with heel button fastening, Wood Top Racer with heel button fastening in place of the ordinary screw, and a Folding Pocket Key for use with Heel Button Skates.

BERRIDGE SHEAR COMPANY, Sturgis, Mich., New York salesroom 127 Duane street: Illustrated catalogue describing high grade steel laid Shears having the Berridge patent lock nut and bolt, in straight and bent trimmers; straight trimmers, oval pattern; straight trimmers, left hand; barbers', bankers' and paper hangers' Shears in the various sizes. Also improved double cutting Pipe Snip, with and without crimper attachment.

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The pleasures of the convention closed with an elaborate banquet, given at the International Hotel. Over 200 persons sat down to the tables. The toastmaster was George E. Watson of Chicago. The toasts and those who responded to them were: "Our Country," Herbert P. Bissell of Buffalo; "Our Association," G. M. Vial of St. Louis, and W. H. Andrews, New York; "Woman," Hon. Thomas Vincent Welch, Niagara Falls; "Expansion and Trade," A. A. Eberson, St. Louis; "Local Clubs," by representatives of various local clubs.

NEW ENGLAND HARDWARE DEALERS' ASSOCIATION.

THE regular monthly meeting and dinner of the New England Hardware Dealers' Association was held at the United States Hotel, Boston, Wednesday evening, October 9. About 60 members were present. Mayor Thomas N. Hart was their principal guest, and he made a very interesting address relative to Boston and its improvements during the past two years. Among the other speakers were James N. Frye, Charles A. Burditt, George S. Saunders and Anthony S. Morss, all of whom related reminiscences of their early Hardware experiences in or near Dock Square, Boston.

The association invited the following, who are the oldest Hardwaremen of Boston, to be present at this meeting, but the first four mentioned were unable to be present owing to their advanced age: Nathaniel B. Doggett, George T. Carter, George Allen, Martin L. Bradford, George S. Saunders, Charles A. Burditt and Daniel Goodnow. Music was furnished during the dinner by a trombone quartette from the Lynn Cadet Band, and the selections were much enjoyed.

PRICE-LISTS, CIRCULARS, &c.

THE MICHIGAN HARDWARE MFG. COMPANY, Grand Rapids, Mich.: Catalogue of Stove Boards, Sheet Metal Ceilings and the improved Gem Hose Plier. The company's new crystallized metal covered Stove Boards are manufactured with the edges on the underside of the base forced into the wood in such a manner as to avert all danger of projecting outward and becoming entangled with carpet or rugs or severing the covering of the base or wooden bottom. The catalogue illustrates a variety of the designs which have been originated by this company. The Metal Ceilings shown are also of original and pleasing designs. The Gem Hose Plier is designed for coupling and mending Garden Hose, and is a very ingenious tool, embodying a number of features which make it especially valuable in this line.

J. B. CARROLL, 36 La Salle street, Chicago: Circular, illustrated in colors, referring to the Hahn Acetylene Gas Burner. This circular gives a number of points of superiority possessed by this Burner, which have made it popular with the trade.

SIMMONS HARDWARE COMPANY, St. Louis, Mo.: Catalogue No. 403, 370 pages, relating to Clocks and Art Goods, Sterling Silver, Silver Plated Ware, Cut Glass and Cutlery.

BARNEY & BERRY, Springfield, Mass.: Ice Skates. A new 48-page catalogue shows a very complete line of Ice Skates, and includes two new styles of medium priced Hockey Skates, Tubular Racer with heel button fastening, Wood Top Racer with heel button fastening in place of the ordinary screw, and a Folding Pocket Key for use with Heel Button Skates.

BERRIDGE SHEAR COMPANY, Sturgis, Mich., New York salesroom 127 Duane street: Illustrated catalogue describing high grade steel laid Shears having the Berridge patent lock nut and bolt, in straight and bent trimmers; straight trimmers, oval pattern; straight trimmers, left hand; barbers', bankers' and paper hangers' Shears in the various sizes. Also improved double cutting Pipe Snip, with and without crimper attachment.

MASBACH-DALSIMER COMPANY, 117 Chambers street, New York: Illustrated catalogue of a comprehensive line of General Hardware and Cutlery in compact form showing a large variety of goods.

STAR MFG. COMPANY, Carpentersville, Ill.: Circular illustrating the Elgin Adjustable Wrench, which holds Pipe up to ¾ inch, and goes into angles, corners and other cramped places.

READING HARDWARE COMPANY'S SOUVENIR.

A handsome souvenir possessing novel features was presented to the delegates by the Reading Hardware Company, Reading, Pa. Aside from the spirit of good fellowship, the execution of the remembrance shows the quality of fine, sharp, clear casting of which the company are capable. The souvenir, here reproduced, was a timepiece set in a satin, silver finished panel, surrounded by a beaded gold bronze circle, and outer frame of similar material, the extreme dimensions of which were 5 x 7 inches, there being a swinging arm at the bottom, so that the piece can be set on table or mantel.

Souvenir of the Reading Hardware Company.

In the frame ornamentation are worked staple articles of their manufacture. The gift was handsomely put up in a jeweler's box.

DUBUQUE HARDWARE CLUB.

THE second semiannual meeting of the Dubuque Hardware Club was held October 8. It was a large and enthusiastic one. The principal business was the election of officers for the next six months, the following being chosen: President, Ed. Healey; vice-president, W. B. Baumgartner; secretary, F. M. Jaeger; directors, president, vice-president, secretary, and Henry Hussman, G. F. Klein, L. Lindenberg and F. M. Cota.

After the election of officers the members were requested to make suggestions regarding work to be done by the directors. The business meeting was followed by a social session, which was heartily enjoyed by everybody present.

It is just a year since this club was organized, and the members have every reason to congratulate themselves on the good results achieved. Among these are the material benefits derived in the way of steadier prices and better profits, although they have been very conservative in this respect and the organization was not followed by any radical advances in price; the additional hours of leisure that were afforded by a mutual understanding regarding early closing; the benefit secured by having jobbers and manufacturers recognize and respect their rights, to a great extent remedying the practice of their selling direct to the trade; and, more than anything else, the kindlier feeling that prevails between the different Hardwaremen of the city, every one of whom realizes that they have trouble enough with their customers without adding thereto by "scrapping" with their competitors. The club believe that local organization is a subject that should interest every Hardwareman, whether doing business in a large city or a small town. They advise merchants in every city and town to get together and join hands; the other fellow is all right if you only get acquainted with him. Every one is in the business for profit. Just as much business will be done, and it will be done more pleasantly, by co-operating than under the system of antagonism and jealousy which exists in so many communities.

TRADE ITEMS.

NANZ & Co., 127 Duane street, New York, manufacturers of watchmen's Clocks and employees' Time Recorders, have undertaken the marketing of the Acme Magneto Electrical Watchmen's Time Detector, manufactured by the Holtzer-Cabot Electrical Company, Boston (Brookline), Mass., for which they have New York and Southern and Western Territory, except Chicago. This device is especially adapted for the use of large manufacturing establishments and corporations where a portable clock could not be advantageously used. It is said to embody features not found in any clock now on the market, and contains the latest improved recording device for pricking the rounds of the watchman on a paper dial. Illustrated pamphlet catalogue, fully illustrating and describing the various styles and mechanism of this Detector, will be sent on application.

H. A. HIGGINS, manager of the Standard Tool Company, Cleveland, Ohio, returned October 4 from a four months' European trip, in the interest of the company's business. During his absence their handsome new office building was completed, and on his return Mr. Higgins found his new private office handsomely furnished and decorated in honor of his coming with palms and flowers.

A LITTLE PAMPHLET, containing President McKinley's last public address, delivered at the Pan-American Exposition, Buffalo, September 5, is being issued with the compliments of M. H. Tarbox, treasurer of the Boston & Lockport Block Company, Boston, Mass. Upon application the company will be pleased to supply gratis any of their friends who would like one or more copies for their own use.

RICHARD DUDGEON, 24 and 26 Columbia street, New York, is sending out a circular to the trade calling attention to the writ of perpetual injunction issued by the Circuit Court of the United States for the northern district of Illinois on June 13 last, restraining the H. Channon Company from using, copying or imitating the name or trade-mark Dudgeon in the sale of Tube Expanders.

A TOUCHING and unusual demonstration of fraternal feeling between employer and those whom he formerly employed was given at Ravenna, Ohio, on the 8th inst., when more than 100 of erstwhile employees of A. C. Williams, manufacturer of Hardware and House Furnishing Specialties in that city, visited him from Chagrin Falls, where Mr. Williams' plant was located before its removal to Ravenna. The occasion was an impressive one, and will probably never be forgotten by those who participated in it. It was a splendid tribute to Mr. Williams' sterling qualities as an employer.

O. L. MILLARD, president of Millard Bros., 123-124 Houndsditch, London, E. C., England, sailed on the "Etruria," October 12, for New York, and is expected in this city the 19th inst. He will make his headquarters here at the Fifth Avenue Hotel during his stay and he expects to return by the "Campania," sailing November 2. The object of the trip is to conclude contracts for 1902 and find new lines in the Hardware and Bicycle trade. This concern are direct importers of American and Continental Mechanics' Tools, Skates, Cutlery, Hardware and Bicycles. They also deal in Enameled Ware, watches, clocks, jewelry and novelties of varied character.

MISCELLANEOUS NOTES.

Bathroom Fixtures and Specialties.

Searls Mfg. Company, Newark, N. J., whose New York office is with Frederick Klages, Eastern and export manager, 127 Duane street, have added a number of new articles to their large assortment of bathroom and household specialties. Among them is a line of brass, bronze and nickel plated hat and coat hooks, with single, double, triple and quadruple hooks of solid metal. In this category also is a combination hat and coat hook for hall use, the extreme dimensions of which are 13½ x 26 inches, the latter being the width. The arms are all curved, the main or lower arms being of tubing ⅝ inch in diameter, while the lesser arms are solid and ⅜ inch in diameter, there being a total of six arms for clothing, hats, &c. Another line consists of two holders for soda water bottles, both of which have four gracefully formed wires to clasp a bottle, with variation as to base. In addition to the goods mentioned there is a very complete assortment of combination fixtures for bathrooms in the way of holders for various articles, such as a tumbler, tooth brushes and soap, a portion of which are fitted with mug, brush holder and soap dish, all of china, while others are intended for combinations of china and glass, there being a total of 20 variations in the combinations. One of the later additions is a towel rack with glass bar, made both single and double, one of which with single glass bar has 2¼-inch glass balls at each end of the bar and is very artistically gotten up. In match safes there are two attractive styles for table use of heavy cast bronze metal, one of which is designed to hold a box of safety matches, the other having an ornamental receptacle for parlor matches; both have ash trays and are handsomely polished. These match safes are particularly suitable for libraries, hotels, cafés, clubs, &c.

Steel Key Rings.

A. Klein, 453-455 Broome street, New York, is the sole agent in the United States for a large and comprehensive line of imported steel key rings, which include plain finished round shapes, together with various ornamental styles such as triangular, chased, flat, heart and twisted forms, of which there are 12 principal styles, in from 10 to 50 mm. diameter (our approximate equivalent being 2-5 to 2 inches, respectively). One specially useful ring is flat, with rounded edges, the inner and outer diameters of which are ⅞ and 1 3-16 inches and 3-32 inch thick. These rings are usually made with the merchant's name and address on one side and a terse reference to goods dealt in on the other. The rings can be finished in either plain steel or dark blue enamel, the sunken plain block letters in both instances being gold bronzed. This style of ring is manufactured to order for dealers who distribute them gratuitously as an advertisement, the value of it being in the fact that the individual always has it about him. The key ring business of the world is said to be confined, in the main, to five or six manufacturers in Austria and France, as far as the secret process of finishing and polishing the outer surfaces so that they are practically rustless is concerned. Although some manufacturers here buy them in solid sizes and bulk, for a multiplicity of purposes, the American market in general takes them on cards of one dozen, assorted in three or four sizes.

Asbestos Sad Irons.

The asbestos sad irons manufactured by the Dover Mfg. Company, Canal Dover, Ohio, an illustrated description of which appeared in our issue of October 3, are made in laundry, tourist and baby sizes. A set of laundry irons consists of one handle and asbestos lined cover combined, three interchangeable cores or bottoms and one asbestos covered stand, weighing complete 16 pounds. The tourist iron includes one handle and cover combined, one core or bottom and one stand, weighing 2½ pounds. The baby iron consists of one handle and cover combined, one core and one stand, and weighs about 1¼ pounds.

The Hubbell Pendant Chain Pull Socket.

Harvey Hubbell, Bridgeport, Conn., is putting on the market the chain pull socket for electric lights, herewith shown. One pull turns on the light, the next extinguishes it. The socket is referred to as having a large sliding contact, and as of simple and strong construction. The chain stands 30 pounds' breaking strain, it is remarked. Regular length of chain is 10 inches, but chains of any length may be attached without the use of tools. The cap and shell are held together by a patented lock joint. It is pointed out that the socket is more convenient and economical than wall switches, that less wiring is required, and that it brings every lamp within easy reach.

The Hubbell Pendant Chain Pull Socket.

Tubular Racer Skate With Heel Button Fastening.

Barney & Berry, Springfield, Mass., are putting on the market tubular racer skates with heel button fastening, as here illustrated. The skate is designed to fill the demand for a detachable fastening in connection with the tubular blade, by those who desire a speed skate without the necessity of changing shoes at the ice. The brackets are referred to as being properly braced, the tube as correct in shape and size and the welded steel blades tempered hard. The skate is furnished in seven sizes, from 9 to 12 inches inclusive. The manufacturers are also putting on the market a new wood top racer skate with heel button fastening in place of the ordinary screw.

Tubular Racer Skate, with Heel Button Fastening.

The Pullman Trouser or Skirt Hanger.

In the accompanying cuts are shown a trouser or skirt hanger offered by the Pullman Sash Balance Company, Rochester, N. Y. The hanger shown in Fig. 1 holds four garments; a smaller size is also made. They

Fig. 1.—The Pullman Trouser or Skirt Hanger.

are constructed of one piece of wire, nickel plated, and may be secured rigidly to a door or wall, or if preferred, hung on a hook. As shown in Fig. 2, the garment is suspended between two of the wires, and may be placed in position with one hand. Skirts are hung by the band. Either size hanger can be carried in a suit case or bag

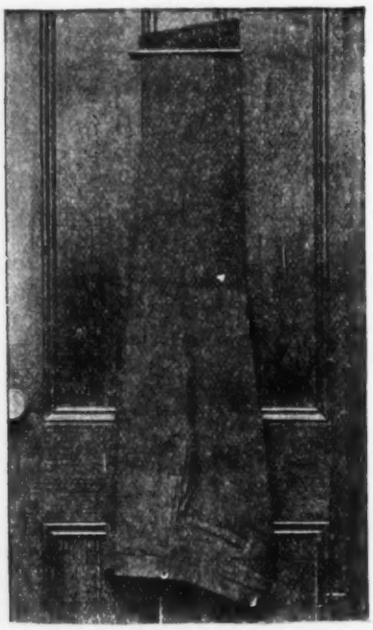


Fig. 2.—Trouser or Skirt Hanger in Use.

when traveling, and thus be always ready for use. The hangers are designed to carry the heaviest garments. The manufacturers mention the following points of excellence: That the hanger takes the bag out of the knees of trousers and puts in just the right amount of crease; that skirts can be held without wrinkling, as the weight is evenly divided on the band; that the hanger saves room in wardrobes and closets; that it teaches method and economy, and that it will last a lifetime.

The Double Hook Endless Garment Hanger.

The improved garment hanger shown herewith is being introduced by Charles P. Dodge, 67 Payne street, Lowell, Mass. The hanger is referred to as being made

The Double Hook Endless Garment Hanger.

of the best steel wire, bent and twisted into proper form, and tinned with the best triple plate tin. The peculiar feature of the hanger is that it has no ends or seams of any kind, and that the hook is double twisted. It is remarked that the hanger will not tear garments or roughen even the softest of velvet collars; also that the hook will not bend out of form, thus making the hanger adapted to hard, heavy work. The manufacturer states that the price of the hanger is low, that the quality is good and that it is guaranteed to give satisfaction.

Aluminum Tea Kettle, Pudding Pan, Etc.

Wagner Mfg. Company, Sidney, Ohio, for whom Neal & Brinker, 18 Warren street, New York, are the Eastern and export representatives, have recently put on the

Fig. 1.—Cast Aluminum Kettle with Self Raising Lid.

market several additions to their already extensive assortment of aluminum hollow ware and kitchen utensils, as here shown. Fig. 1 is a tea kettle, the lower part of which is a one-piece casting of pure aluminum; Fig. 2, representing the same utensil, but showing to better advantage the method of automatically raising the lid. On one side of the lid, which is also cast in one piece, is an arm, projecting at such an angle that by a downward pressure of the wood handled bale it raises the lid for

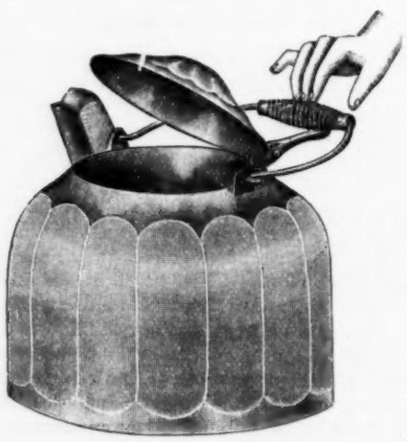


Fig. 2.—The Lid Automatically Raised.

refilling the kettle at faucet or on the stove without danger of burning or scalding the hand. As aluminum absorbs heat rapidly these kettles are only made in flat bottom styles, in sizes 6, 7, 8 and 9. Fig. 3 represents a polished aluminum soap dish. Fig. 4 is an illustration of a pudding pan cast in one piece of aluminum.

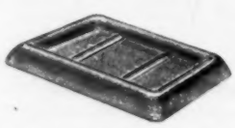


Fig. 3.—Polished Aluminum Soap Dish.

Fig. 4.—Cast Aluminum Lipped Pudding Pan.

This pan is made in both 4 and 7 pints capacity, and being much thicker than similar pans of stamped ware will not warp. Attention is drawn to the side lips as a convenience for lifting the pan.

The Tower Picture Cord Adjuster.

A very convenient device for adjusting picture cord has recently been put on the market by the Grand Rapids Brass Company, Grand Rapids, Mich., as herewith illustrated, Fig. 1 showing the device and Fig. 2 various methods of attaching and using it. The adjuster is intended to be attached on the under side of the picture frame, and, when the wire picture cord is passed through it, the length of the cord can be instantly regulated. The adjuster is made of steel, and consists of a reel secured to a plate, the latter having a pawl or dog. The end of the wire picture cord is passed through a hole in the reel and knotted. Then by turning the reel with the finger the cord can be shortened to the desired length. By lifting the pawl the cord is easily lengthened. The device is offered as a labor saving method of attaching picture cord, appealing to every one who has been obliged to frequently climb up and down a stepladder when hanging a picture.

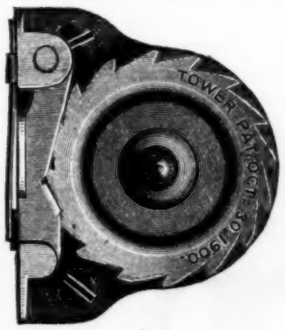


Fig. 1.—The Tower Picture Cord Adjuster.

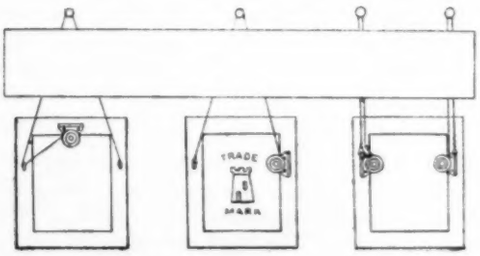


Fig. 2.—Methods of Adjusting Picture Cord Adjuster.

Watchman's Station.

Nanz & Co., 127 Duane street, New York, in connection with watchmen's clocks and employees' time recorders, of which they are the manufacturers, have recently begun the manufacture of a watchman's iron box station, as here illustrated. This is made of cast iron properly finished, and is intended particularly for outside use, also in coal and copper mines, as well as for the use of night police in smaller towns. It is 4½ inches wide, and intended to protect the watchman's key, which is secured by means of a chain and kept in the box when not in use. To get at the key it is necessary to lift the cover, and after the key is replaced it automatically closes itself and protects the key from the weather.

Watchman's Iron Box Key Station.

The Boss Rotary Washing Machine.

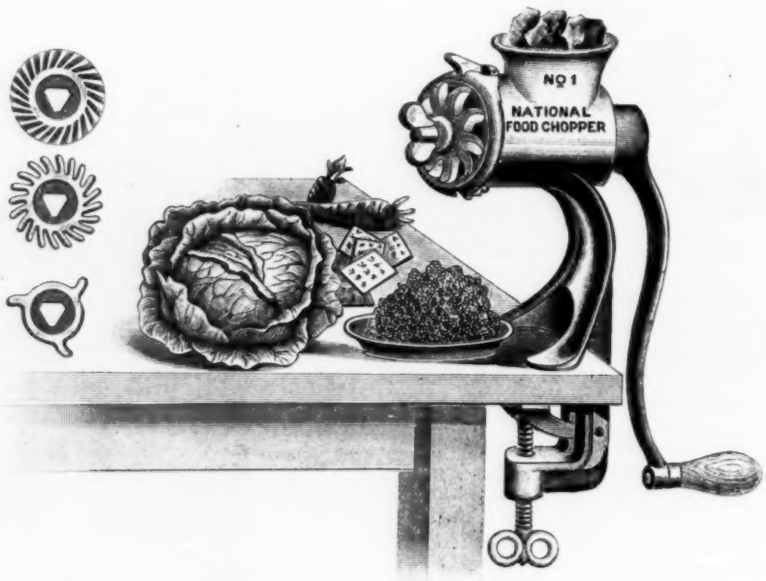
The Boss Washing Machine Company, Cincinnati, Ohio, are offering the washing machine here shown. The gearing is composed of four castings, all of which are intermeshed to insure immediate and concurrent action of all parts when one part moves. There is no lost motion, which, it is stated, is an important feature, as lost motion is referred to as the principal cause of breakage in rotary washers. The cogs and all of the castings are extra heavy, it is explained; also that the weight of the castings and the simplicity of the mechanism overcome danger of breakage of any parts. In designing the machine it was the aim of the manufacturers to secure more than a full revolution to the pinwheel before reversing each time.

Fig. 1.—The Boss Rotary Washing Machine.

Fig. 2.—The Boss Rotary Washing Machine Open.

National Meat and Food Chopper.

The National Specialty Company, Philadelphia, Pa., for whom Warner & Rucker, 88 Chambers street, are the New York representatives, have just put on the market the National meat and food chopper, as here illustrated. It is made in sizes Nos. 1, 2 and 3. The No. 1 is the popular size for family use, No. 2 being somewhat larger and of the same general style, while No. 3 is equipped with legs so that it can be screwed to bench or table, for the use of butchers, clubs, hotels, restaurants, &c. This chopper has four separate cutters for pulverizing and chopping various food products, cutting meat, &c., coarse, medium or fine, according to the nature of the material treated. The manufacturers dwell particularly on the simplicity of this chopper and the ease with which it can be cleansed after use. The worm screw spindle which forces the material against the knife is fastened to the handle with a recessed screw. The thumb screw at the left, which holds the knife in position, works against an end piece which has a bayonet catch top and bottom, and is held in place by a hinged piece of metal, that holds it securely in position. The curve of the standard enables a vessel for receiving the material cut to be pushed well under the delivery point. Attention is also called to the improved clamping device. The whole machine is covered with a coating of pure tin.



National Meat and Food Chopper.

A. Arriola & Co. are now conducting the business formerly carried on under the name of Spinas & Montans, Florence, Ariz. In the past the stock has comprised general Hardware, Wagon Material and Paints and Oils, but the new firm have added the sale of groceries, dry goods, crockery and other merchandise carried in general stores. The business is both wholesale and retail.

The Fisher Tube Skates

The Crosby Company, 506 Genesee street, Buffalo, N. Y., are offering the skates illustrated herewith. They are referred to as strong and light, the blades being of thin tool steel hardened and tempered, resting against shoulders inside the triangular tube, held in place by rivets and soldered. The tubes and cups are sheet steel. The process of drawing them into shape, it is explained, makes them unusually stiff. The cups are dovetailed and soldered to the tubes, to close the seams and to make it impossible to pull them off. The toe and heel plates are half hard sheet steel and are seamed to the cups. This is alluded to as the lightest and yet the toughest and strongest construction possible. It is pointed out that the skates are comfortable and fast, because they are extremely light, and, having the blades ground absolutely flat, except at the extreme ends, which are rounded to prevent tripping, the weight is distributed equally over the entire surface. The heaviest skater, it is stated, will not force the blades into the ice; also that the thin blades being ground perfectly flat, there is as much surface of steel on the ice as on rocker or concave skates.

Racing Skate.

Hockey Skate.

The Fisher Tube Skates.

Current Hardware Prices.

REVISED OCTOBER 15, 1901.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓@33⅓&10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent discount.

Cut Prices.—*In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.*

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 4 1901), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, ₩ doz. $3.00....33⅓@33⅓&10%
North's.....10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—

Ives' Patent.....25&5%
Taplin's Perfection.....5%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Eagle Anvils.....₩ lb 7¼@7¾c
Hay-Budden, Wrought.....8½@9¼c
Horseshoe brand, Wrought.....9c@9.4c
Trenton, Wrought.....₩ lb 8¼@8¾c

Imported—

Peter Wright's.....9¼@9¾c

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....20%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Hull Bros. Co.:
Lots of 1 doz.....25%
Small or Lots.....20%
Lots of 3 doz.....30%

Augers and Bits—

Com. Double Spur.....70@70&10%
Boring Machine Augers.....
60&10&10@70&10%
Car Bits, 12-in. twist.....60@60&10%
Jennings' Pattern
Auger Bits.....50&10&5@60%
Ford's Auger and Car Bits.....40&10%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings 'list....40%
No. 30. R. Jennings' List.....50%
Russell Jennings'.....35&10&5%
L'Hommedieu Car Bits 15&10@15&10&5%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....50&10%
Snell's Car Bits, 12-in. twist.....60%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—

Standard List.....65@65&5%

Expansive Bits—

Clark's small, $15; large, $26.....50&10%
Lavigne's Clark's Pattern, No. 1, ₩ doz., $26; No. 2, $18.....50&10%
C. E. Jennings & Co., Steer's Pat.....33⅓%
Swan's.....6%

Gimlet Bits—

Common Double Cut..gro. $2.25@2.75
German Pattern.....gro. $3.25@4.50

Hollow Augers—

Bonney Pattern, per doz. $11.00@11.50
Ames.....25&10%
New Patent.....25&10%
Universal.....20%
Wood's Universal.....25%

Ship Augers and Bits—

Ford's.....40%
Snell's.....40%
C. E. Jennings & Co.:
L'Hommedieu's.....15&10%
Watrous'.....40%

Awl Hafts, See *Hafts, Awl.*

Awls—

Brad Awls:
Handled.....gro. $2.75@3.10
Unhandled, Shouldered..gro.65@60c
Unhandled, Patent.....gro. 60@70c
Peg Awls:
Unhandled, Patent....gro. 31@34c
Unhandled, Shouldered..gro.65@70c
Scratch Awls:
Handled, Common..gro. $3.50@4.00
Handled, Socket..gro. $11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

First Quality, best brands..$5.50@5.75
First Quality, other brands$5.25@5.50
Jobbers' Special Brands:
Good Quality.....$4.50@4.75
Best Quality.....$5.00@5.25
Cheap, Handled Axes.....$5.50@5.75
Bevelled add 25c doz.

Axle Grease—See *Grease, Axle.*

Axles—

Iron or Steel.
Concord Loose Collar.....4½@5c
Concord, Solid Collar.....4½@5½c
No. 1 Common.....3¼@3¾c
No. 1 Com. New Style..3¼@3¾c
No. 2 Solid Collar.....4¼@4½c
Nos. 11 to 14.....70@70&10%
Nos. 15 to 18.....75@75&10%
Nos. 19 to 22.....75@75&10%
5% cash 10 days.

Boxes, Axle—

Common and Concord, not turned..
lb. 4¼@4½c
Common and Concord, turned.....
lb. 4¾@5c
Half Patent.....lb. 8@9c

Balances—

Caldwell new list.....50%
Pullman's.....60%

Sash—

Spring—

Spring Balances ...50&10@50&10&5%
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%
Peerless.....50%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb..
2¾@3c

Beams, Scale—

Scale Beams, List Jan. 12, '85..40&10%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters—Egg—

Standard Co.:
No. 5 Steel Handle Dover, ₩ gro. $6.50
No. 10 Cast Handle Dover..₩ gro. $8.00
No. 10 Steel Handle Dover, ₩ gro $8.00
No. 15 Extra Heavy Steel Handle, ₩ gro. $15.00
Rival, ₩ gro.....$1.00
Taplin Mfg. Co.: ₩ g o.
No. 50 Small Family size.....$5.50
No. 100 Regular Family size.....$8.0
No. 102 Regular Family size tinned.....
$9.50
No. 150 Large Family size.....$15.00
No. 152 Large Family size, tinned.....
$17.00
Lyon's, Standard size.....₩ doz. $1.75
Wonder (S. & Co.).....₩ gro. $7.50

Bellows—

Blacksmith, Standard List.70@70&10%
C. E. Jennings & Co., Blacksmith..60&10%
C. E. Jennings & Co., Hand.....33⅓%

Blacksmiths—

Inch..	*3*	*32*	*34*	*36*	*38*	*40*
Eac	*$3.50*	*3.75*	*4 25*	*4.90*	*5.35*	*6.15*
Extra Length:						
Each.	*$4.00*	*4.55*	*5.10*	*5.60*	*6.40*	*7.50*

Net Prices.

Blowers—

Inch...	*6*	*7*	*8*	*9*	*10*	*12*
Doz....	*$3.75*	*4.25*	*4.50*	*5.00*	*5.7*	*6.75*

Net Prices.

Bells—Cow—

Ordinary goods.....75&5@75&10%
High grade.....70@70&10%
Jersey.....75&10%
Texas Star.....50%

Door—

Abbe's Gong.....45%
Barton Gong.....55%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's....40@40&10%
Yankee Gong.....55%

Hand—

Hand Bells, Polished.....60&5@65%
White Metal.....55@55&10%
Nickel Plated.....50@5 0&10%
Swiss.....60@60@7½%
Silver Chime.....33⅓@33⅓&10%

Miscellaneous—

Farm Bells.....lb 2@2½c
Steel Alloy Church and School.....
50&10&5@60%
National Bell Foundry Co.:
Superior Cast Steel Church and School Bells.....50&10&5@60%
Wilmot & Hobbs Mfg. Co, Gongs.....70%

Belting—Rubber—

Agricultural (Low Grade).75&10@80%
Common Standard.....75@75&10%
Standard.....70@70&10%
Extra.....60&10&5%
High Grade.....50&10@50&10&5%
Boston Belting Co.:
Sea nless Stitched, Imperial.....45&5%
Boston.....50&5%
Niagara.....60&5%

Leather—

Extra Heavy, Short Lap...50&10@60%
Regular Short Lap.....60@60&5%
Standard.....60&10@55&10%
Light Standard.....65@70%

Cotton—

Rossendale-Reddaway B. & H. Co.:
Sphinx Brand.....60&10%
Durable Brand.....70%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters.....40@50%

Bicycle Goods—

John S. Long's Son's 1899 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—Tackle—

Common Wooden.....70&5@70&10%
Cleveland Steel.....60&10@70%
Ford's Star Brand Self Lubricating.....60&10%
Hollow Steel, Ford's Pat. Star Brand.....50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50&10%
See also *Machines, Hoisting.*

Boards Stove—

Zinc, Crystal, &c.....40&10@..%

Bolts—

Carriage, Machine &c.—

Common, list Jan. 31, '95.. .65&5@..%
Norway Iron, $3.00, list Oct. 7, '84..
80@80&5%
Phila. Eagle, $3.00 list May 24, '99....
80@80&10%
Bolt Ends, list Jan 30, '95.70&7½@..%
Machine, list Oct. 1, '99 .....70&5@..%
Machine with C. & T. Nuts.....
65&10@..%

NOTE—*The rapid advances in manufacturers' prices enable the jobbers to cut prices freely.*

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz...	*$0.26*	*.30*	*.39*	*.47*	*.65*

Cast Iron Spring Foot:

Inch	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.25*	*1.75*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz	*$0.75*	*1.05*	*1.30*

Cast Iron Shutter, Brass Knobs:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.67*	*.80*	*1.00*

Wrought Barrel Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz .	*$0.44*	*.50*	*.61*	*.70*	*1.28*

Wrought Barrel ... .70&10@75&5%
Wrought " Bronzed.40&5@50&10%
Wrought Flush, B. K..50&10@60&10%
Wrought Shutter...40&10&10@60&5%
Wrought Square Neck.....50@50&10%
Wrought Sunk.....50@50&10%
Ives' Patent Door.....60%

Stove and Plow—

Plow .....60&10@..%
Stove.....77½%

Tire—

Common.....77½%
Norway Iron.....80@80&5%
American Screw Company:
Norway Phila., list Oct. 16, '84....82½%
Eagle Phila., list Oct. 16, '84.....85%
Bay State, list Dec. 28, '99.....77½%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84..82½%
Eagle Phila., list Oct. 16, '84.....85%
Eclipse, list Dec. 28, '99.....77½%
Port Chester Bolt & Nut Company
Empire, list Dec. 28, '99.....77½%
Keystone Phila, list Oct. '84.....85%
Norway Phila., list Oct. '84.....82½%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch..	*1*	*1¼*	*1½*	*2*
Per doz..	*$4.50*	*5.00*	*5.75*	*7.25*
Inch			*2¼*	*2½*
Per Doz.....			*$8.65*	*11.50*

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25%

Boring Machines—See *Machines, Boring.*

Boxes, Mitre—

C. E. Jennings & Co.....40%

Braces—

NOTE.—*Most Braces are sold at net prices.*
Common Ball, American..$1.15@1.25
Barber's.....60&10&10@60&10%
Fray's Genuine Spofford s.....60%
Fray's No. 70 to 120, 81 to 133, 207 to 414.....60%
C. E. Jennings & Co.....50&10%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Patent..50%
P. S. & W. Co Peck's Patent.....
60&10@65&5%

Brackets—

Wrought Steel.....75&5@75&10%
Bradley's Wire Shelf:
Full cases.....80%
Broken cases.....75&10%
Griffin's Pressed Steel.....75%
Griffin's Folding Brackets.....70&10%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—

Wire Goods Co.....75%

Buckets, Well and Fire—See *Pails*

Bucks, Saw—

Boss.....₩ gro. $48.00
Hoosier.....₩ gro. $36.00

Bull Rings—See *Rings, Bull.*

Butts—Brass—

Wrought list Sept., 96.....40@40&5%
Cast Brass, Tiebout's.....50%

Cast Iron—

Fast Joint, Broad.....50@50&10%
Fast Joint, Narrow.....50@50&10%
Loose Joint.....70&5@70&10%
Loose Pin.....70&5@70&10%
Mayer's Hinges.....70&5@70&10%
Parliament Butts.....70 5@70&10%

Wrought Steel—

Table and Back Flaps...60&10%
Narrow and Broad.....60&10%
Inside Blind.....60%
Loose Pin.....60&10%
Loose Pin, Ball and Steeple Tip.....7 &10%
Japanned, Ball Tip Butts...6 %
Bronzed Wrt. Nar. and Inside Blind Butts.....45&20@45&25%

Extra 25@35&5%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 600 and 900 series.....40&10%
Hendryx Bronze:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong.....per lb..3¼@4c
Sharp, 1 prong.....per lb... 4@4¼c
Perkins' Blunt Toe.....₩ lb 3½¢
Perkins' Sharp Toe.....₩ lb 4 ¢

Can Openers—See *Openers, Can*

Cans, Milk—

	5	8	10 gal.	
Illinois Pattern.	$1 75	2.10	2.25	each.
Iowa Pattern....	....	2.40	2.60	each.
Buffalo Pattern.	....	2.40	2.50	each.
	20	30	40	qts.
New York Pattern	3.00	3.25	3 40	each.
Baltimore Pattern	2.50	2 85	3.10	each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$48.00	60 00	108 gro

Caps—Percussion—

Eley's E. B......60c
G. D......per M 32@34c
F. L......per M 37@40c
G. E......per M 47@50c
Musket.....per M 57@60c

Primers—

Berdan Primers, $1.00.....5%
B. L. Caps (Sturtevant Shells) *$1.00*.....5%
All other primers.....$1.10@$1.12

Carpet Stretchers—See *Stretchers, Carpet.*

Cartridges—
Blank Cartridges:
22 C. F., $5 50 .....10c$5@10c10%
38 C. F., $7 00.....10c$5@10c10%
22 cal. Rim, $1,50.....10c$5@10c10%
32 cal. Rim $2. 5.....10x$5@10c10%
B. B. Caps, Con. Ball Swgd.$1 80@1.85
B. B. Caps, Round Ball... $1.1@1.15
Central Fire .....25@25&5%
Pistol and Rifle.....15c$@15c10%
Primed Shells and Bullets.....
15c$@15c10%
Rim Fire Sporting.....50@50c5%
Rim Fire, Military ....15c$@15c10%

Casters—
Bed..... ....70@70c10%
Plate.....75@75c10%
Philadelphia..... .....75@75c10%
Boss.....70&10%
Boss Anti-Friction..... .....70&10%
Martin's Patent (Phoenix).....45%
Payson's Anti-Friction ...70&10&10%
Standard Ball Bearing.....45%
Tucker's Patent, low list.....30%

Cattle Leaders—
See *Leaders, Cattle.*

Chain, Coil—
NOTE.—*The following prices are f. o. b. Pittsburgh. Manufacturers in quoting usually add freight to destination.*
American Coil, Cask lots:

3-16	¼	5-16	⅜	7-16	½	9-16
7.75	5.80	4.85	4.00	3.85	3.75	3.55
⅝	¾ to 1 in.			1¼ to 1¾ inch.		
3.55	3.50 per lb.			3.75 per 100 lb.		

Less than Cask lots add 25c.
German Coil, list July 24, '97.60&10c10%

Halters and Ties—
Halter Chains..... .. 50c10%
German Halter Chain, list July 24, '97.....60c10c10%
Cow Ties..... .....60%

Trace, Wagon, &c.—
Traces, Western Standard: 100 pair
6¼—6-3, Straight, with ring...$30.00
6½—6-2, Straight, with ring.. $31.00
6¾—6-2, Straight, with ring.. $35.00
6½—10-2, Straight, with ring..$38.00
Add 2¢ per pair for Hooks.
Twist Traces 2¢ per pair higher than Straight Link.
Trace, Wagon and Fancy Chains..
50c10@50c10c5%

Miscellaneous—
Jack Chain, list July 10, '93:
Iron.....60@50c10%
Brass.....60@60c10%
Safety Chain.....70$5@70c10%
Gal. Pump Chain.....*lb.* 4½@4½c
Covert Mfg. Co.:
Breast.....35&2%
Halter.....35&2%
Heel.....35&2%
Rein.....35&2%
Stallion.....35&2%
Covert Sad. Works:
Breast.....70%
Halter.....70%
Hold Back.....70%
Rein.....70%
Oneida Community:
Am. Coil and Halters....50&10&5@60%
Am. Cow Ties..... .....35&5@40&5%
Eureka Coil and Halter.....60@60&5%
Niagara Coil and Halters....60@60&5%
Niagara Cow Ties.....45&5@45&10&5%
Wire Goods Co.:
Dog Chain.....60&10%
Universal Dbl-Jointed Chain.....50%

Chalk—(From Jobbers.)
Carpenters' Blue.....*gro.* 42@45c
Carpenters', Red .....*gro.* 37@40c
Carpenters', White.....*gro.* 33@35c
See also Crayons.

Chalk Lines—See *Lines.*

Checks, Door—
Bardsley's.....40&10%
Columbia.....50&10%
Eclipse.....60@60&10%

Chests, Tool—
American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemens' Chests, with Tools.....30%
Farmers', Carpenters', etc., Chests, with Tools.....20%
Machinists' and Pipe Fitters' Chests, Empty.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....20%

Chisels—
Socket Framing and Firmer
Standard List.....70c$5@7.c10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer No. 10.....60&10%
C. E. Jennings & Co. Socket Framing No. 15.....60&10%
Swan's.....70&5%
L. & I. J. White.....80@30&5%

Tanged—
Tanged Firmers.....40c$@40c10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 191, 181.....25%
L. & I. J. White, Tanged.....25&5%

Cold—
Cold Chisels, good quality lb. 13@15c
Cold Chisels, fair quality...lb. 11@13c
Cold Chisels, ordinary.....*lb. 8@9c*

Chucks—
Beach Pat., each $8.00.....20%
Massey's Planer and Milling.....15@20%
Skinner Patent Chucks:
Combination Lathe Chucks.....40%
Drill Chucks, Patent and Standard...30%
Drill Chucks, New Model..... 2 %
Independent Lathe Chucks.....40%
Improved Planer Chucks.....25%
Universal Lathe Chucks.....40%
Face Plate Jaws.....40%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination.....40%
Czar Drill 30%
Geared Scroll 30%
Independent.....40%
Union Drill.....30%
Universal.....40%
Face Plate Jaws.....35%

Clamps—
Adjustable, Hammers'.....20@20&5%
Cabinet, Sargent's ..... 50&10%
Carriage Makers', P., S. & W. Co. 40&10%
Carriage Makers' Sargent's... ...50&10%
Bes y, Parallel..... 35¼&10%
Lueman s, Utica Drop Fo ge & Tool Co.....40%
Saw Clamps, see *Vises, Saw Filers'.*

Cleaners Sid-walk—
Star Socket, All Steel.....₱ doz. $4.00 net
Star Shank, All Steel.....₱ doz. $3.75 net
W. & ... s, All ... el, 7¼ ... ₱ d ..., $3.05; 8 in., $3.10; 8½ in., $3.25.

Cleavers, Butchers'—
Foster Bros.....30%
New Haven Edge Tool Co.'s.....40%
Fayette R. Plumb.....33⅓&10%
P., S & W .....50&5%
L. & I. J. White.....25%

Clippers—
Chicago Flexible Shaft Company
Handy Toilet.....₱ doz. $7.20
Mascotte Toilet.....₱ doz. $3.40
Monitor Toilet.....₱ doz. $9.00
Stewart's Patent.....₱ doz. $10.00

Clips Axle—
Eagle and Superior ¼ and 5-16 inch.....70c10%
Norway, ¼ and 5-16 inch..70@7.c10%

Cloth and Netting, Wire—See *Wire, &c.*

Cocks, Brass—
Hardware list:
Compression and Plain Bibbs,65c&5% Globe, Kerosene, Racking, &c., Cocks.....65c10%

Coffee Mills—See *Mills, Coffee.*

Collars Dog—
Brass, Pope & Stevens' list.....40%
Embossed, Gilt, Pope & Stevens' list30&10%
Leather Pope & Stevens' list.... 40%

Compasses, Dividers, &c.
Ordinary Goods .....70c10@75%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Call's Patent Inside.....55%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....60%
Compasses.....50%
J. Stevens A. & T. Co.....25&10%

Compressors Corn Shock—
J. B. Hughes' ₱ doz.....$2.50

Conductor Pipe, Galva.—
L. C. L. to Dealers:

Territory.	*Not nested.*	*Nested.*
Eastern.....	70c$%	70c5%
Central.....	65c10%	70%
Southern...	65%	65c$ 4%
S. Western.	60c12½%	60c15%

Terms 2% for cash.
Jobbers receive extra 12½@2½ on carloads loose, and extra 12½ on carloads crated.
See also *Eave Troughs.*

Coolers, Water—

Nos.	2	3	4	6
Labrador	$11.50	$14.00	$17.50	$20.00
8 gal.	$2 .00			
No.	3	4	6	8
Iceland..	$23.00	$25.00	$30.00	$37.50
10	14 gal.			
$57.00	$72.00			

Coopers' Tools—
See *Tools, Coopers'.*

Cord—Sash—
Braided, Drab.....*lb.* 25c
Braided, White, Common..lb. 17@18c
Cable Laid Italian..lb. A, 18c; B, 16c
Common India.....*lb 9* @9½c
Cotton Sash Cord, Twisted...13@16c
Patent Russia .....*lb* 12½@13c
Cable Laid Pussia.....*lb.* 13½@14c
India Hemp, Braided.....*lb* 15@15c
India Hemp, Twisted.....*lb.* 10@12c
Patent India, Twisted....*lb.*10@12c
Pearl Braided, cotton .....₱ lb 17@18¢
Massachusetts, White .....₱ lb 22½¢
Massachusetts, D ab. .....₱ lb 26½¢
Eddystone Braided Cotton.....₱ lb 19¢
Harmony Cable Laid Italian.....₱ lb 18¢
Osgawan Mills:
Crown, Solid Braided White...₱ lb 22¢
Braided, Giant, White.....₱ lb 20¢
Peerless:
Cable Laid Italian.....16¢
Cable Laid Russian.....14¢
Cable Laid India.....12¢
Braided India.....18¢
Phœnix, White.....19¢
Samson, Nos. 7 to 12:
Braided, Drab Cotton .....₱ lb 32½¢
Braided, Italian Hemp.....₱ lb 32½¢
Braided, Linen .....₱ lb 49¢
Braided, White Cotton, Spot.₱ lb 28½¢
Nos. 6 gauge, 1¢ extra.
Silver Lake:
A quality, Drab, 40¢.....15%
A quality, White, 35¢.....15%
B quality, Drab, 35¢.....15%
B quality, White, 30¢.....15%
Italian Hemp, 40¢ 15%
Linen, 67½¢.....15%

Wire, Picture—
Braided or Twisted .....85@85c10%
Note.—There is a good deal of confusion in lists, some using old list and others the new list.

Corn Knives and Cutters—See *Knives, Corn.*

Corn Planters—
See *Planters, Corn—*

Crackers, Nut—
Little Giant,..... .....₱ gr. $34.00

Cradles—
Grain.....50%

Crayons—
White Round Crayons, gross.5½@6c
Cases, 100 gro., $4.50, at factory.
D. M. Steward Mfg. Co.
Metal Workers' Crayons gr. $2.50
Soapstone Pencils, round, flat or square .....gr.$1 50
Rolling Mill Crayons ... gr. $2.00
Railroad Crayons (composition) gr. $2.00
Case lots 20%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crooks, Shepherds'—
Fort Madison, Heavy .....₱ doz. $7.00
Fort Madison, Light.....₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—
Victor Garden .....₱ doz. $10.00

Cutlery, Table—
International Silver Company:
No. 12 Medium Knives, 1847, ₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....₱ doz $3 00
Wm. Rogers & Son.....₱ doz. $2 50
Simeon L. & Geo H. Rogers Company:
12 dwt. Medium Knives.....₱doz. $3.00
No. 7 Medium Knives.....₱ doz. $2.50

Cutters—Glass—
H. H. Mayhew Co.....40%
Smith & Hemenway Co.....50%

Meat—
Hale's..Nos. 11 & 111 12 & 112 13 & 113
Per doz .. $10.80 15 20 18.00
American.....30%

Nos.	1	2	3	4	5
Each.....	$5	$7	$10	$25	$50	$80

Connecticut.....50%

No...	20	40	60	8	10	12
each	$1.75	2.00	2.25	3.00	3.50	4.00

Enterprise.....25@25&7½%

Nos.....	5	10	12	22	32
Each.....	$2	$3	$2.50	$4	$6

Dixon's, ₱ doz.....30&10@40%

Nos..	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Home No. 1, ₱ doz. $22.75.....50&10%
Little Giant, ₱ doz.....33⅓&5@40%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

Sterling.....33⅓&5%

Nos.....	1	2
Each.....	$2.00	$2.50

New Triumph No. 605, ₱ doz. $24.00..
30&10&10%
Woodruff's, ₱ doz .....30&10@40%

Nos.....	100	150
	$15.00	$18.00

Chadborn's Smoked Beef Cutter, ₱ doz. $60.00
Enterprise Beef Shavers..... ..25@30%

Slaw and Kraut—
Henry Disston & Sons:
Slaw, Corn Grater, &c 40%
Kraut Cutte s 24 x 7, 26 x 8, 30 x 9.55%
Kraut Cutters 36 x 12, 40 x 12.....40%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife, ₱ gr....$18@$20
Slaw Cutters, 2 Knife, ₱ gr....$23@$36

Tobacco—
All Iron, Cheap.....*doz. $1.25@$1.50*
Enterprise.....25&10%
National, ₱ doz. $21.00.....40%
Sargent's, ₱ doz., No. 2.....45&10%
Sargent's No 2 and 21 .....60&10%

Washer—
Appleton's, ₱ doz. $16.00....50&10&10%
Bonney's.....40%

Diggers, Post Hole, &c.—
Dalbey Post Hole Auger...per doz , $9.00
Iwan's Improved Post Hole Auger....40%
Iwan's Perfection Post Hole Digger.. ₱ doz. $9.00
Kohler's Universal..... ₱ d z. $14.00
Kohler's Little Giant.....₱ d z. $14. 0
Kohler's Hercules.....₱ doz. $12.00
Kohler's Invincible.....₱ doz. $10 00
Koh er's Rival.....₱ d z. $9.00
Kohler's Pioneer.....₱ doz. $9.00
Never-Break Post Hole Diggers, ₱ doz. $24.00.....60%
Samson, ₱ doz. $34.00.....25%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Doors, Screen—
Porter's Plain, No. 6.....₱ doz. $6 50
Porter's Ornamental, No. 70, ₱ doz. $10.00

Drawers, Money—
Tucker's Pat. Alarm Till No. 1, ₱ doz. $18; No. 2, $15 No. 3, $14; No. 4, $18.

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Common Blacksmiths' Drill..each $1.50@$1.75
Blacksmiths' Self-feeding.....*each $5.75@4.00*
Breast, Millers Falls, each $3.00 .15&10%
Breast, P., S. & W .....40@10&5%
Goodell Automatic Drills..40&5@40&10%
Jones & Lamson Automatic Drills Nos. 2 and 3.....10¢
Johnson's Drill Points.....25@1%
Ratchet, Curtis & Curt's 25%
Ratchet, Parker's 40%
Ratchet, Weston's.....20@25%
Ratchet, Whitney's, P.S. & W....50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓&

Twist Drills—
Standard List.....*67½&5@65&5%*

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Screw Driver Bits ...per doz. 45@70c
Balsey's Screw Holder and Driver, ₱ doz. 3 -inch, $6; 4-in., $7.50 6-in., $9..40%
Buck Bros.....30%
Buck Bros' Screw Driver Bits.....30%
Champion.....40&10%
Douglass Mfg. Co.....20&20&10%
Fray's Hol. Ridle Sets, No. 3, $12.00 50%
Gay's Double ction Ratchet.....35%
Goodell's Automatic 50&10&10@50&10&10&5%
Mayhew's Black Handle.....50%
Mayhew's Monarch .....40&10%
New England Specialty Co.....50&10%
Sargent & Co.'s:
Nos. 1, 50, 55 and 60.....50&10&10%
Nos. 20 and 41.....60½&10%
Smith & Hemenway Co .....40&5%
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles.....60&10%
No. 86.....70&10%
Swan's:
Nos. 65 to 68.....50%
No. 40 .....40&10%
Nos. 25, 35 and 45.....20&10&10%

Eave Trough Galvanized

Territory.	*L. C. L.*	
Eastern.....	75c10%	Carloads extra 12½¢
Central.....	75c7½%	
Southern.....	70c12½%	
S. Western.....	70c10%	

Terms, 2% for cash.
See also *Conductor Pipe and Elbows.*

Egg Beaters—See *Beaters, Egg*

Egg Openers—
See *Openers, Egg.*

Elbows and Shoes—
Factory shipments.....60@60&10%
Perfect Elbows (S. S. & Co.)..... .....40%

Emery, Turkish—

	4 to 6 lbs	6 to 150 lbs	Flour
Kegs.....	*lb.* 5c	5½c	5¾c
½ *Kegs*	*lb.* 5½c	5¾c	5¾c
Kegs.....	*lb* 5c	6c	
10-lb cans. 10 in case		6½c	7c 8c
10-lb. cans less than 10		10c	10c 8c

NOTE.—*In lots 1 to 3 tons a discount of 10% is given.*

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—
See *Pins, Escutcheon.*

Extractors, Lemon Juice—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's .....50&10%

Faucets—
Cork Lined..... 70c$@70c10c$%
Metallic Key, Leather Lined..... 70@70c10%
Red Cedar ....50@50c5%
B. & L. H. Co.:
Lockport, Metal Plug, reduced list60&5%
Star.....60@60&5%
Star, Metal Plug new list....40@40&5%
West's Lock, Open and Shut Key50&10%
John Sommer's Peerless Tin Key.... 40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Metal Key.50&10%
John Sommer's Duplex Metal Key....60%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined..50%
John Sommer's Reliable Cork Lined 50&10%
John Sommer's Chicago Cork Lined..60%
John Sommer's O. K. Cork Lined.....50%
John Sommer's No Br n , Cedar.....50%
John Sommer's Perfection Cedar....40%
McKenna, Brass:
Burglar Proof, N. P.....35%
Improved, ¾ and ⅞ inch.....25%
Self Measuring:
Enterp ise, ₱ doz. $66.00..... .40&10%
Lane's, ₱ doz. $36.00 .....40&10%
National Measuring, ₱ doz. $66.00...40%

Felloe Plates—
See *Plates, Felloe.*

Files—Domestic—
List revised Nov. 1, 1899.
Best Brands.....70@75c5%
Good Brands.....75&10@75c10c10%
Fair Brands..... .....80@80c10%
Second Quality.....80c10@80c25%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....2%

Fixtures, Grindstone—
Net Prices:

Inch....	*15*	*17*	*19*	*21*	*24*
Per doz.	*$2.60*	*2.75*	*3.00*	*3 50*	*4.40*

P., S. & W. Co.....50@50&5%
Reading Hardware Co.....60%
Sargent's .....60&10&10%
Stowell's Giant Grindstone Hanger.... ₱ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy.....50&10&10%
Stowell's Grindstone Fixtures Light.... 60&10%

Fodder Squeezers—
See *Compressors.*

Forks—
Sept. 1, 1900, list.
Grain or Barley Forks, 18 to 20 inches.....70c10%
Hay, 2 tine.....67½%
Hay, 3 tine.....66⅔%
Hay, 4 tine, Header and Barley Forks, 13 to 16 inches.....66⅔%
Manure, 4 tine 70%
Manure, 5 and 6 tine.....70%
Spading.....70c5%
Iowa Dig-Easy Potato.....65%
Victor, Hay.....66⅔%
Victor, Manure.....70%
Victor, Header.....60&10%
Champion, Hay.....66⅔%
Champion, Manure.....70%
Columbia, Hay.....66⅔&5%
Columbia, Manure 70%
Columbia, Spading 70%
Hawkeye Wood Barley 4 tine ₱ doz. $5.00; 6 tine, $6.00.
W. & C. Potato Digger.....65%
Acme Hay.....60&10&7½%
Acme Manure, 4 tine.....60&20&10%
Acme Manure, 6 tine.....66⅔&10&2%
Dakota Header.....65&15&5%
Jackson Steel Barley..... 65&15&5%
Kansas Header.....65%
W. & C. Favorite Wood Barley 4 tine, ₱ doz., $5.00; 6 tine, $6.00
Plated, -See *Spoons.*

Frames—Saw—
Red, Polished and Varnished..doz. $1.15@$1.30
White.....*doz.* 70@80c

Screens and Frames—
See *Screens.*

Freezers Ice Cream—
Qts... 2 3 4 6 8 10
Best. $1.45 1 65 1.95 2.40 3.20 4.3
Good $1 25 1.40 1.70 2.15 2.75 3.7
Fair, $1.00 1.10 1.30 1.75 2.30 2.90

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse—
Per 1000 Feet.
Hemp Fuse $2.60
Cotton Fuse.....2.90
Single Taped Fuse 3.25
Double Taped Fuse.....4.20
Triple Taped Fuse.....5.00
Less 2½%

Gates, Molasses and Oil-

Stebbins ..... 30@30&10%

Gauges—

Marking, Mortise, &c. ..... 55&10@55&10&10%

Barrett's Comb. Roller Gauge ..... ₱ doz. $6.75@7.25

Stanley R. & L. Co.'s Butt & Babbet Gauge ..... 20&10%

Wire, Brown & Sharpe's 25%

Wire, Morse's 25%

Wire P., S. & W. Co ..... 30@30&10%

Cimlets— Single Cut—

Nail, Metal, Assorted gro. $1.40@1.60

Spike, Metal, Assorted gro. $2.80@3.25

Nail, Wood Handled, Assorted, gro. $1.75@2.00

Spike, Wood Handled, Assorted gro. $3 25@3.50

Glass, American Window

Jobbers' List, Jan. 21, 1901.

Less than Carloads ..... 80&20%

Carloads ..... 85&5%

5000 Boxes 87%

Glue—Liquid, Fish—

List A, Bottles or Cans, with Brush. 37½@50%

List B, Cans (¼ pts., pts., qts.) ..... 35½@45%

List C, Cans (½ gal., gal.) ..... 25@45%

International Glue Co. (Martin's) ..... 40&10@50%

Glue Pots—See *Pots, Glue.*

Grease, Axle—

Common Grade ..... *gro. $5.00@6.00*

Dixon's Everlasting ..... 10-lb pails, ea. 85¢

Dixon's Everlasting, in bxs. ₱ doz. 1 lb $1.20; 2 lb $2.00

Snow Flake: 1 qt. cans, per doz. $2.00; 2 qt., $3.20; ½ gal. cans per doz. $6.00; 5 gal. $16.00; 5 gal. $24.00 } 10%

Grindstones—

Bicycle Grindstones, each ..... $2.50@3.00

Pike Mfg. Co:
Improved Family Grindstones, per inch, per doz. $2.00
Pike Mowe Knife and Tool Grinder, each ..... $6.00 } 33⅓&5

Velox Ball Bearing, mounted, Angle Iron Frames ..... each, $3.25

Guards, Snow—

Cleveland Wire Spring Co.:
Galv. Steel ₱ 1000 ..... $9.00
Copper ₱ 1000 ..... $18.00

Gun Powder—See *Pot. Ed.*

Hack Saws—See *Saws.*

Hafts, Awl—

gro.

Peg Patent, Leather Top ..... *$4.90@5.25*

Peg Patent, Plain Top ..... *$3.50@3.75*

Sewing, Brass Ferrule ..... *$1.50@1.60*

Saddlers', Brass Ferrule ..... *$1.35@1.45*

Peg, Common ..... *$1.25@1.35*

Brad, Common ..... *$1.50@1.75*

Halters and Ties—

Covert Mfg. Co.:
Web ..... 45&2%
Jute Rope ..... 45&2%
Sisal Rope ..... 30&4%

Covert's Saddlery Works:
Web and Leather Halters 70%
Jute and Manila Rope Halters 70%
Sisal Rope Halters ..... 60&20%
Jute, Manila and Cotton Rope Ties 70%
Sisal Rope Ties ..... 60&20%

Hammers—
Handled Hammers—

Heller's Machinists' ..... 50@50&5%

Heller's Farriers ..... 50@50&5%

Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75 ..... 40&10%

Peck, Stow & Wilcox ..... 50&10%

Fayette R. Plumb:
Plumb, A. E. Nail ..... 40&10&7½%
Engineers' and B. S. Hand. 60&10&2½%
Machinists' Hammers 60%
Riveting and Tinners' ..... 40&10&7½%

Sargent's C. S. New List 45%

Heavy Hammers and Sledges—

8 lb. and under ..... *lb. 45c*
8 to 5 lb ..... *lb. 35c* } 30@50&10%
Over 5 lb ..... *lb. 30c*

Wilkinson's Smiths' ..... *9½c@10c lb.*

Handcuffs and Leg Irons

See *Police Goods.*

Handles—
Agricultural Tool Handles—

Axe, Pick, &c ..... *60@60&10%*

Hoe Rake, Fork, &c ..... *60@60&10%*

Shovel, &c., Wood D Handle ..... *50@50&5%*

Cross-Cut Saw Handles—

Atkins' ..... 40&5%

Champion ..... 45@45&10%

Disston's 50%

Mechanics' Tool Handles—

Auger, assorted ..... *gro. $2.50@$2.50*

Brad Awl ..... *gro. $1.25@$1.50*

Chisel Handles:
Apple Tanged Firmer, gro. ass'd, $2.25@$2.35; large, $2.50@$2.60.
Hickory Tanged Firmer, gro. ass'd. $1.75@$2.20; large, $2.50@$3.70.
Apple Socket Firmer, gro. ass'd, $1.70@$1.85; large, $2 00@$2.25
Hickory Socket Firmer, gro ass'd, $1.60 @ $1.75; large, $1.75 @ $2.00
Hickory Socket Framing, gro. ass'd, $2.50@$2.75; large, $2.65@$2.85

File, assorted ..... *gro. $1.00@$1.15*

Hammer, Hatchet, Axe, &c *60%*

Hand Saw, Varnished, doz. 70@75c
Not Varnished ..... *55@60c*

Plane Handles:
Jack doz. 25c; Jack Bolted ..... *55@60c*
Fore, doz. 35@35c; Fore, Bolted ..... *70@75c*

Nicholson Simplicity File Handle, ₱ gro. ..... $0.85@$1.20

Hangers—

Barn Door, New Pattern, Round Groove, Regular:

Inch	*3*	*4*	*5*	*6*	*8*
Doz	*$0.85*	*1.20*	*1.50*	*1.90*	*2.50*

Barn Door, New England Pattern, Check Back, Regular:

Inch	*3*	*4*	*5*	*6*
Doz	*$1.30*	*1.75*	*2.50*	*3.00*

Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin 25%

Chisholm & Moore Mfg. Co.:
Baggage Car Door 50%
Elevator 40%
Railroad 55%

Cronk Hanger Co.:
Loose Axle 60%
Roller Bearing ..... 60&10%

Lane Bros.:
Parlor, Ball Bearing $4.00
Parlor, Standard $3.25
Parlor, New Model $3.75
Parlor New Champion $2 25
Barn Door, Standard ..... 60&10%
Covered ..... 50&10&10&5%
Special ..... 60&10%

Lawrence Bros.:
Advance 60%
Cleveland 70%
Crown 60%
New York 60%
Peerless ..... 60&10%
Sterling 60%

McKinney Mfg. Co.:
No. 1, Special, $15 ..... 60&10%
No. 2, Standard, $18 ..... 60&10%

Stowell Mfg. and Foundry Co.:
Acme Parlor Ball Bearing 40%
Atlas 60%
Badger Barn Door 50%
Baggage Car Door 50%
Climax Anti-Friction 50%
Elevator 40%
Express 50%
Interstate 60%
Lund Parlor Door 50%
Magic 50%
Matchless 60%
Nansen ..... 60&10%
Railroad 50%
Street Car Door 50%
Steel, Nos. 300, 404, 500 ..... 40&15%
Stowell Parlor Door 50%
Wild West, Nos. 300, 404, 500 ..... 5%
Zenith for Wood Track 50%

Taylor & Boggis Foundry Co.:
Kidder's ..... 50&15&10&5%

Columbian Hdw. Co.:
American Trackless ..... 33⅓&10%

Wilcox Mfg. Co.:
Bike Roller Bearing ..... 60&10%
C. J. Roller Bearing ..... 60&10%
Cycle Ball Bearing 50%
Dwarf Ball Bearing 40%
Ives, Wood Track ..... 60&10%
L. T. Roller Bearing ..... 60&10&5%
New Era Roller Bearing ..... 50&10%
O. K. Roller Bearing ..... 60&10&5%
Prindle, Wood Track 60%
Richards' Wood Track 60%
Richards' Steel Track ..... 50&10%
Spencer Roller Bearing ..... 60&10%
Tandem Nos. 1 and 2 ..... 60%
Underwriters' Roller Bearing 40%
Wilcox Auditorium Ball Bearing 20%
Wilcox Barn Trolley No. 123 ..... 40%
Wilcox Fire Trolley, Roller Bearing 30%
Wilcox Le Roy Noiseless Ball Bearing 40%
Wilcox New Century ..... 50&10&10%
Wilcox Trolley Ball Bearing 40%

Extra 5&10% often given.

Harness Menders—See *Menders.*

Harness Snaps—See *Snaps.*

Hasps—

McKinney's Perfect Hasp ₱ doz. 50%

Wrought Hasps, Staples, &c.—See *Wrought Goods.*

Hatchets—

Best Brands ..... *60@50&10%*

Cheaper Brands ..... *60@60&10%*

Note.—Net prices often made.

Hay and Straw Knives—

See *Knives.*

Hinges—
Blind and Shutter Hinges—

Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No	*1*	*3*	*5*
Doz. pair	*$0.75*	*1.45*	*2.90*

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No	*1*	*1¼*	*2*	*2½*
Doz. pair	*$0.60*	*.65*	*.53*	*.55*

Mortise Reversible Shutter, (Buffalo, &c.)

No	*1*	*1½*	*2*
Doz. pair	*$0.65*	*.60*	*.55*

North's Automatic Blind Fixtures, No. 2, for Wood, $0.00; No. 3, for Brick, $11.50 ..... 10%

Parker ..... 70@75%

Reading's Gravity ..... 70&10%

Sargent's, Nos. 1, 3, 5, 11 & 13 ..... 70&10&70&20%

Stanley's Steel Gravity Blind Hinges, ₱ doz. sets, without screws, $0.30; with screws, $1.15.

Wrightsville H'dware Co.:
O. S., Lull & Porter ..... 80&2½%
Acme, Lull & Porter ..... 75&10%
Queen City Reversible ..... 75&10%
Stenger's Positive Locking, Nos. 1 & 3 ..... 70&10&5%
Shepard's Noiseless, Nos. 00, 65, 55 ..... 70&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5 ..... 75&7½%
1868, Old Pat'n, Nos. 1, 3 & 5 ..... 75&7½%
Tip Pat'n, Nos. 1, 3 & 5 ..... 75&7½%
Buffalo Gravity Locking, Nos. 1, 3 & 5 ..... 75&7½%
Shepard's Double Locking, Nos. 20 & 25 ..... 70&10%
Champion Gravity Locking, No. 75 ..... 75&7½%
Steamboat Gravity Locking, No. 10 ..... 75&7½%
Pioneer, Nos. 000, 45 & 5½ ..... 75&7½%
Empire, Nos. 101 & 103 ..... 70&7½%
W. H. Co.'s Mortise Gravity Locking, No. 2 ..... 40&10%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No	*1*	*2*	*3*
Hinges with Latches	*$1.35*	*1.90*	*2.65*
Hinges only	*$1.20*	*1.40*	*2.00*
Latches only	*.60*	*.80*	*.65*

New England:
With Latch ..... *doz* ..... *@$1.55*
Without Latch ..... *doz.* ..... *@$1.25*

Reversible Self-Closing:
With Latch ..... *doz.* ..... *@$1.80*
Without Latch ..... *doz.* ..... *@$1.45*

Western:
With Latch ..... *doz. $1.40@1.75*
Without Latch ..... *doz. $0.95@1.10*

Wrightsville H'dware Co.:
Shepard's or Clark's, doz. sets,

No.	1	2	3
Hinges with Latches	$1.30	2.00	2.70
Hinges only	1.20	1.50	2.10
Latches only	.65	.65	.70

Extra 10% often given on most of these Hinges.

Spring Hinges—

Holdback, Cast Iron, gro. *$7.00@7.85*

Non-Holdback, Cast Iron ..... *gro. $6.50@6.75*

J. Bardsley
Bardsley's Patent Checking 15%

Bommer Bros.:
Bommer Ball Bearing Floor Hinges 40%
Bommer Spring Hinges 40%

Chicago Spring Butt Co.:
Chicago 25%
Floor Hinge 50%
Garden City Engine House 25%
Keene's Saloon Door 25%
Triple End 50%

Hoffman Hinge & Foundry Co.:
No. 70 & 80 Holdback Detachable $8.50

Lawson Mfg. Co.:
Machine 35%
Matchless Pivot 45%

Payson Mfg. Co.:
Oblique ..... 50&10%

Stover Mfg. Co.:
Ideal, No. 16, Detachable, ₱ gr. $12.50
Ideal, No. 4 ..... ₱ gr. $9.00
New Idea No. 1 ..... ₱ gr. $9.00
New Idea, Double Acting 45%

Columbian Hdw. Co.:
Acme, Wrt. Steel 80%
Acme, Brass 20%
American 30%
Columbia, No. 14 ..... ₱ gr. $9.00
Columbia, No. 18 ..... ₱ gr. $25.00
Columbia, Adjustable 30%
Gem new list 25%
Clover Leaf ..... ₱ gr. $12.50
Oxford new list 25%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list Mar. 15, 1901:
Light Strap Hinges *75%*
Heavy Strap Hinges *80%*
Light T Hinges *70%*
Heavy T Hinges *66⅔%*
Extra Heavy T Hinges ..... *75&10%* } *Extra 20@25%*
Hinge Hasps *60%*
Cor. Heavy Strap *80%*
Cor. Ex. Heavy T ..... *75&10%*

Screw Hook and Strap:
6 to 12 in ..... *lb. 3½c*
14 to 20 in ..... *lb. 3 c*
22 to 36 in ..... *lb. 2¾c*

Screw Hook and Eye:
¾ to 1 inch ..... *lb. 5 c*
⅝ inch ..... *lb. 6 c*
½ inch ..... *lb. 7 c*

Miscellaneous—

Hoffman's Steel Spring Butt Hinges ..... 40&10%

Hoffman's Offset Refrigerator Hinges ..... 40&10%

Hods, Coal—

	15	*16*	*17*	*18 inch.*
Galv. Open	*$2.70*	*3.00*	*3.30*	*3.60* ₱ doz.
Jap. Open	*$2.10*	*2.40*	*2.70*	*3.00* ₱ doz.
Galv. Fun'el	*$3.30*	*3.60*	*3.90*	*4.20* ₱ doz.
Jap. Funnel	*$2.70*	*3.00*	*3.30*	*3.60* ₱ doz.

Hoes— Eye—

Scovil and Oval Pattern ..... *60&5@60&10&5%*

Grub, list Feb. 23, 1899 ..... *70@70&10%*

D. & H. Scovil 35%

Handled—

Sept. 1, 1900, List:
Field and Garden ..... *75&2%*
Ladies', Boys', Toy and Onion ..... *70&10&10%*
Street and Mortar ..... *75&7½&2%*
Cotton ..... *70&10&10&5&2%*
Planters' ..... *70&20%*
Weeding *75%*

Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices.

Ft. Madison Crucible Garden Hoe ..... 75&2%

Ft. Madison Crescent Cultivator Hoe, per doz. ..... 75&10&2%

Ft. Madison Mattock Hoes:
Regular Weight ..... ₱ doz. $4.50
Junior Size ..... ₱ doz. $4.00

Ft. Madison Sprouting Hoe, ₱ doz. $4.80

Ft. Madison Dixie Tobacco Hoe ..... 75&20%

Kretsinger's Cut Easy, per doz ..... 75&2%

Warren Hoe 60%

W. & C. Ivanhoe ..... 75&2%

B. B. Cultivator Hoe ..... 75&10&2%

Acme Weeding ..... 75&10&2%

W. & C. Lightning Shuffle Hoe, ₱ doz. $4.85

Hog Rings and Ringers—

See *Rings and Ringers.*

Hoisting Apparatus—

See *Machines, Hoisting.*

Hollow Ware—

See *Ware, Hollow.*

Holders— Slit—
Door—

Angular, ₱ doz. $24.00 ..... 45&10%

Empire 50%

File and Tool—

C. E. Jennings & Co.'s Model Tool Holders 33⅓%

Nicholson File Holders and File Handles 33⅓%

Hooks— Cast Iron—

Bird Cage, Reading 60%

Bird Cage, Sargent's List ..... 50&10@60%

Ceiling, Sargent's List ..... 40&10%

Clothes Line, Hoffman's ..... 40&10%

Clothes Line, Reading List ..... 65&10@65&10&10%

Clothes Line, Sargent's List ..... 50&10&2½%

Coat and Hat, Sargent's List ..... 45&10%

Clothes Line, Stowell's 70%

Coat and Hat, Stowell's 70%

Coat and Hat, Reading ..... 70@75%

Coat and Hat, Wrightsville ..... 65&10%

Harness, Reading List ..... 70&10@75%

Wire—

Belt *80%*

Wire C. & H. Hooks ..... *60&10@60&10&5%*

Atlas, Coat and Hat:
Single Cases 45%
10 Case Lots ..... 45&10%

Csar Harness ..... 50&10&5%

Wire Coat and Hat:
Acme 60%
B. B 60%
V Brace, Chief and Czar 60%

Gem 60%

Bright Wire Goods—See *Wire.*

Wrought Iron—

Box, 6 in., per doz. $1.50; 8 in., $1.75; 10 in., $2.00.

Cotton ..... *doz. $1.05@1.35*

Wrought Staples, Hooks, &c.—See *Wrought Goods.*

Miscellaneous—

Bush, Light, doz. $5.50; Medium, $6.00; Heavy, $6.50

Grass	*Nos. 1*	*2*	*3*	*4*
Best		*$1.50*	*1.75*	*2.00*
Common	*$1.30*	*1.50*	*1.40*	*1.60*

Potato and Manure 70%

Whiffletree ..... *lb. 4½c*

Hooks and Eyes:
Brass ..... *60&10&10@70%*
Malleable Iron ..... *70&5@70&10%*

Covert Saddlery Works' Self Locking Gate and Door Hook 60%

Crown Picture ..... 50&10%

Bench Hooks—See *Bench Stops.*

Corn Hooks—See *Knives, Corn.*

Horse Nails—See *Nails, Horse*

Horseshoes—

See *Shoes, Horse.*

Hose, Rubber—

Garden Hose, ¾-inch:

Competition	*ft.*	*4½@ 4½c*
3-ply Standard	*ft.*	*5 @ 5 c*
4-ply Standard	*ft.*	*8 @ 8 c*
3-ply extra	*ft.*	*9 @10 c*
4-ply extra	*ft.*	*11 @12 c*

Cotton Garden, ¾-in., coupled:

Low Grade	*ft.*	*6 @7 c*
Fair quality	*ft.*	*8 @9 c*

Irons— Sad—

From 4 to 10 ..... *lb 3@3½c*

B. B. Sad Irons ..... *lb. 3½@4c*

Chinese Laundry ..... *lb. 5@5½c*

Chinese Sad ..... *lb. 3½@3½c*

Mrs. Potts', per set:

Nos.	*50*	*55*	*60*	*65*
	67@72c	*64@69c*	*77@83c*	*74@79c*

New England Pressing ..... *lb.. 3½@3½c*

Soldering—

Soldering Coppers, 1 @ 1¼ lb., $1 @ 33c.; 2 lb., 19 @ 21c

Covert Mfg. Co. ..... 20&5%

Smith & Hemenway Co's Sets 70%

Pinking—

Pinking Irons ..... *doz. 50@60c*

Jack Screws—See *Screws.*

Jacks, Wagon—

Covert Mfg. Co., Steel ..... 45&2%

Covert's Saddlery Works':
Daisy ..... 60&10%
Victor ..... 60&10%

Lockport ..... 40@40&10%

Lane's Steel ..... 33⅓&5%

Kettles—

Brass, Spun, Plain ..... *20@25%*

Enameled and Cast Iron—See *Ware, Hollow.*

Knife Sharpeners—

See *Sharpeners, Knife.*

Knives—
Butcher, Shoe, &c.—

Foster Bros.' Butcher, &c. 70%

Hartzell Cutlery Co. ..... 80&5%

Smith & Hemenway Co ..... 40&10%

Hay and Straw—See *Hay Knives.*

Corn—

Ft. Madison Cut-Easy, ₱ doz. $3.50

Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.90; Serrated, $2.10; Yankee No. 1, $1.80; Yankee No. 2, $1.15.

Drawing—

Standard List ..... *70&5@70&10%*

Adjustable Handle 75%

Bradley's 45%

Cantelo's Folding ..... 50@50&5%

C. E. Jennings & Co. Nos. 45, 46 ..... 40&10%

Jennings & Grimm ..... 60&10&5%

Swan's ..... 70&10&5%

Watrous 70%

L. & L. J. White ..... 30&5&10%

Hay and Straw—

Lightning Pat'n... per doz. $6.25@6.50

Iwan's Sickle Edge ..... ₱ doz. $10.00

Iwan's Serrated ..... ₱ doz., $11.00

Lightning, (Genuine) ..... $6.25@6.50

Maine ..... ₱ doz. $6.50

Mincing—

Buffalo ..... ₱ gro. $15.00

Miscellaneous—

Farriers' ..... *doz. $2.00@3.00*

Wostenholm's ..... ₱ doz. $3.90@3.95

Knobs—

Base, 2¼-inch, Birch, or Maple, Rubber tip, gro ..... *$1.80@1.95*

Carriage, Jap. all sizes ..... *gro. 30@33c*

Door, Mineral ..... *doz. 60@65c*

Door, Por. Jap'd ..... *doz. 65@70c*

Door, Por. Nickel ..... *doz. $2.00@2.10*

Bardsley's Wood Door, Shutter, &c. 15%

Picture, Sargent's ..... 60&10%

Ladders, Step—

Handy Ladder Works:

Length. Feet.	Extended Length. Feet.	Use.	Shipped Ready for Use. Per doz.	Shipped K. D. Per doz.
4	7		$16.00	$14.00
5	9		19.50	17.00
6	11		24.50	21.00
7	13		29.50	25.00
8	15		34.00	29.00
9	17		39.00	33.00
10	19		43.00	36.00
11	21		46.50	40.00
12	23		51.00	45.00

Ladies' Melting—

[illegible] Co. 25%
F., S. & W. 5%
Reading 5%
Sargent's ..... 40@40&10%

Lanterns—Tubular—

Regular Tubular ..... doz. $4.35@4.75
Side Lift Tubular ..... doz. $4.75@5.25
Square Lift Tubular ..... doz. $4.75@5.25
Other styles ..... 40&10@40&10@25%

Bull's Eye Police—

No. 1, 2¾ inch $3.60
No. 2, 3 inch $4.00

Latches, Thumb—

Boggin's Latches ..... doz. 30@33¢

Lawn Mowers—

See *Mowers, Lawn.*

Leaders. Cattle—

Small ..... doz. 50¢; large, 55¢
Covert Mfg. Co. ..... 45&2%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Solid Grip, Payson Mfg. Co. 80%
K & E 45%

Lines—

Wire Clothes, Nos...	*18*	*19*	*20*
100 feet	$2.20	2.00	1.65
75 feet	$1.80	1.70	1.30

Cosawan Mills.
Crown Solid Braided Chalk 33⅓%
Mason's, No. 0 to No. 5 ..... 33⅓%
Samson Cordage Works:
Solid Braided Chalk, No. 0 to 3 ..... 40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gr. 30%

Locks—Cabinet—

Cabinet Locks ..... 33⅓@33⅓&7½%

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]

Reading Hardware Co. 50%
R. & E. Mfg. Co. 50%
Sargent & Co. ..... 40@40&10%

Elevator—

Stowell's 40%

Padlocks—

Wrought Iron ..... 75¢&10@80%
R. & E. Mfg. Co. Wrt. Steel and Brass. 50%

Sash, &c.—

Hitch's:
Bronze and Brass 66⅔%
Iron 70%
Ives' Patent.:
Bronze and Brass 62½%
Iron 65%
Wrought Bronze and Brass ..... 55&5%
Wrought Steel 60%
Payson's Signal 80%
Reading ..... 60&10&10@70%

Machines—Boring—

Without Augers.

	Upright.	Angular.
Improved No. 3...	$4.25	No. 1 $5.00
Improved No. 4...	3.75	No. 2 3.38
Improved No. 5...	2.75	
Jennings'	2.50	3.00
Millers' Falls		5.75
Snell's, Rice's Pat.	2.50	2.75
Swan's, No. 500	5.10	No. 200 6.45

Hoisting—

Moore's Anti-Friction Differential Pulley Block 30%
Moore's Hand Hoist, with Lock Brake. 30%
Moore's Portable Pneumatic Hoist 25%

Ice Cutting—

Chandler's 15%

Washing—

Wayne American ..... ₱ doz. $28.00
Western Star, No. 2 ..... ₱ doz. 28.00
Western Star, No. 3 ..... ₱ doz 30.00
St. Louis, No. 41 ..... ₱ doz. 60.00

Mallets—

Hickory ..... 45&5@50%
Lignumvitæ ..... 45&5@50%
Tinners', Hickory and Applewood, doz. ..... 50@55¢

Mats—

Door—

Mastic Steel (W. G. Co.) 10%

Mattocks—

See *Picks and Mattocks.*

Meat Cutters—

See *Cutters, Meat.*

Milk Cans—See *Cans, Milk*

Mills—Coffee—

Enterprise Mfg. Co. ..... 25@30%
National, list Jan. 1, '94 ..... 30%
Parker's Columbia and Victor ..... 50&10@60%
Parker's Box and Side ..... 50&10@60%
Swift, Lane Bros. 30%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Net prices are generally quoted.

Cheap	*all sizes.*	$1.80@2.10			
Good	*all sizes.*	$2.50@2.75			
	10	*12*	*14*	*16-inch*	
High Grade	4.25	4.50	4.75	5.00	

Continental ..... 60&10&5%
Great American ..... 70&5%
Great American Ball Bearing ..... 60&10&5%
Quaker City ..... 70&5%
Pennsylvania ..... 60&10&5%
Pennsylvania Golf 50%
Pennsylvania Horse 40%
Pennsylvania Pony 45%
Philadelphia:
Styles M., S., C., K., T. ..... 70&5%
Style A, all Steel ..... 65&10%
Style F, Low Wheel ..... 60&10%
Style E, High Wheel ..... 70&10&5%
Drexel and Gold Coin, low list ..... 50&5%

Nails—

Cut and Wire. See Trade Report.
Wire Nail and Brads, Papered. List July 20, 1899 ..... 85&10%
Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—

Nos.	6	7	8	9	10	
A. C.	.25¢	23¢	22¢	21¢	21¢	....40&5%
Auxable	.25¢	24¢	23¢	24¢	23¢	..50&10%
Capewell	.19¢	18¢	17¢	16¢	16¢	....10&5%
C. B. K.	.25¢	25¢	22¢	21¢	21¢	....40%
Champ'n	28¢	26¢	25¢	24¢	23¢	..... 40&10&5%
Clinto	.19¢	17¢	16¢	15¢	14¢	..... 30&10&5%
Maud S.	.25¢	23¢	22¢	21¢	21¢	..... 50%
Neponset	23¢	21¢	20¢	19¢	18¢	..... 40%
Putnam	.23¢	21¢	20¢	19¢	18¢	..... 33⅓%
Vulcan	...23¢	21¢	20¢	19¢	18¢	...25&10%

American, Nos. 5 to 16 ₱ lb. ..... 9@9½¢
Jobbers' special brand ... per lb. 8@9¢

Picture

	1½	2	2½	3	3½ in.
Brass Head	.45	.60	.70	.95	1.00 gro.
Por. Head	..	1.10	1.10	1.10	.. gro.

Nippers, See *Pliers and Nippers.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—

Cold Punched, Tapped: ..... *Off*
Mfrs. or U. S. Standard, list.
Hexagon, plain $5.50
Square, plain $5.10
Square, C. T. & R. $5.30
Hexagon, C. T. & R. $6.00
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square Blank $5.30
Hexagon Blank $6.00
Square Tapped $5.30
Hexagon Tapped $5.90

Oakum—

Best or Government ..... lb. 6¼¢
Navy ..... lb. 5 c
U. S. Navy ..... lb. 5¼¢
Plumbers' Spun Oakum ..... 2¾¢
In carload lots ¼¢ lb. off f.o.b. New York.

Oil Axle—

Snow Flake:
1 pt. cans, per doz. $3.00
1 qt. cans, per doz $4.80
1 gal. cans, per can $15 00
5 gal. cans, per doz. $66.00
} 33⅓&10%

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper ..... 50@50&5%
Tin or Steel ..... 60¢10@65%
Zinc ..... 60¢10@65%
Paragon:
Brass and Copper ..... 40¢10%
Tin or Steel ..... 60¢10%
Zinc ..... 60¢10%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₱ doz. 20%
Malleable, Hammers' Old Pattern, same list ..... 50&10%
Wilmot & Hobbs Mfg. Co:
Spring Bottom Cans ..... 70@70&10%
Railroad Oilers etc. ..... 60@60&10%

Openers—Can—

French ..... doz. 35¢
Iron Handle ..... doz. 25@27¢
Sprague, Iron Hdle ..... per doz 35@40¢
Saraine Scissors ..... doz. $1.75@3.00
Tip Top ..... per doz. $0.75
National, ₱ gro. ..... $1.75@$2.00
Stowell's ..... per doz. 35@45¢
Waldorf, ₱ gro. $3.63

Egg—

Nickel Plate ..... per doz., $2.25
Silver Plate ..... per doz., $3.50

Packing—

Asbestos Packing, Wick and Rope, 16½@18¢ lb.

Rubber—

Sheet, C, I. ..... 8@12½
Sheet, C. O. S. ..... 9@15%
Sheet, C. B. S. ..... 10@14%
Sheet, Pure Gum ..... 50@70%
Sheet, Red ..... 35@40%
Jenkins' Standard, ₱ lb 80¢ ....35@25&5%

Miscellaneous—

American Packing ..... 7@10¢ lb.
Cotton Packing ..... 13@14¢ lb.
Italian Packing ..... 9@15½¢ lb.
Jute ..... 3½@4¢ lb.
Russia Packing ..... 7@11¢ lb.

Pails—Creamery

S. S. & Co., with gauges. No 1 $0.50; No. 2, $3.75 ₱ doz.

Galvanized—

Price per gro.

Quart	*10*	*12*	*14*
Water, Regular	18.00	21.00	24.00
Water, Heavy	24.00	27.00	30.00
Fire, Rd. Bottom	31.00	33.00	35.00
Well	27.00	29.00	31.00

Pans—Dripping—

Standard List ..... 60@60&5%

Fry—

Common Lipped:

No.	*1*	*2*	*3*	*4*	*5*
Per doz.	$0.60	.75	.85	.95	1.15

Roasting and Baking—

Regal, S. S. & Co., ₱ doz., Nos. 5, $4.50; 10 $5.00; 20 $5.50; 30, $6.00
Simplex, ₱ gro., No. 40 $30.00; 50, $34.50; 60 $39 00; 140, $33.00; 150, $37.50; 160, $43.00.

Paper—

Building Paper—

Asbestos: ..... *lb.*
Building Felt 3c
Mill Board, sheet, 40 x 50 inches ... 4c
Mill Board, roll, thicker than 1-16 inch 3c
Mill Board, roll, 1-16 in. thick and less 2c

	Per roll
Rosin Sized Sheathing:	*500 sq. ft.*
Light wt., 20 lbs. to roll	$0.32
Medium wt., 30 lbs. to roll	$0.47
Heavy wt., 40 lbs. to roll	$0.58
Medium Grades Water Proof Sheathing	$0.65@1.25
Deafening Felt, 5, 6 and 7½ sq. ft. to lb., ton	$56.00@57.00
Red Rope Roofing, 250 sq. feet per roll	$1.65

Tarred Paper.

1 ply (roll 500 sq. ft.), ton ..... $26 00@27.00
2 ply, roll 108 sq. ft. ..... 50@50c
3 ply, roll 108 sq. ft. ..... 65@70c
Slater's Felt (roll 500 sq. ft.) ..... 50@60c
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.) $2.75

Sand and Emery—

List Dec. 23, 1899 ..... 50¢10@50¢10¢10%

Parers—Apple—

Advance ..... ₱ doz. $4.50
Baldwin ..... ₱ doz. $5.00
Bonanza ..... each $5.00
Dandy ..... each $7.50
Eureka, 1898 ..... each $16.00
Family Bay State ..... ₱ doz. $12.00
Hudson's Little Star ..... ₱ doz. $4.00
Hudson's Rocking Table ..... ₱ doz $5.50
Improved Bay State ₱ doz. $27.00@30.00
New Lightning ..... ₱ doz. $5.50
Reading 72 ..... ₱ doz. $4.00
Reading 78 ..... ₱ doz. $7.00
Turn Table '98 ..... ₱ doz. $5.50
White Mountain ..... ₱ doz. $4.00

Potato—

Saratoga ..... ₱ doz. $5.50
White Mountain ..... ₱ doz. $4.50

Picks and Mattocks—

List Feb. 23, 1899 ..... 70@70¢10%

Pigeons—Clay

Markle's Black Birds, f.o.b. factory, per M $3.75
See also *Traps, Target.*

Pinking Irons—

See *Irons, Pinking.*

Pins—Escutcheon—

Brass 60%
Iron, list Nov. 11, '85 ..... 60%

Pipe, Cast Iron Soil—

Factory Shipments—Carload lots.
Standard, 2-6 in. ..... 65&5%
Extra Heavy, 2-6 in. ..... 70&10%
Fittings ..... 75¢&10&5%
NOTE.—*Freight allowed on Carload lots.*

Pipe, Merchant, Boiler Tubes, &c.—

Less than Carloads to Consumers.

Merchant Pipe.	*Black.*	*Galvanized*
¼ to ½ inch	61%	48%
¾ to 10 inch	68½%	56%
Boiler Tubes	*Up to*	*22 feet*
Steel.		
1 to 1¼ inch and 2¾ to 5 inch inclusive		65½%
2 to 2½ inch, inclusive		60%
6 to 10 inches		59%

Iron.

1 to 1½ inch and 2½ in.	43½%
1¾ to 2¼ inch	47%
2¾ to 13 inch	53%

Casing, Cut Lengths.	*S. & S.*
2 to 3 inch	53½%
3¼ to 4 inch	59%
4½ to 12½ inch	61½%

NOTE.—*Prices are largely nominal owing to scarcity of Pipe. Jobbers are obtaining almost any price they ask.*

Pipe, Sewer—

Standard Pipe and Fittings, 2 to 24 in. New England 70%
New York and New Jersey 73%
Ohio and Michigan 8%
Carload lots are generally delivered.

Planes and Plane Irons—

Wood Planes—

Molding ..... 40¢&2½@40¢10%
Bench, First quality ..... 45¢10@45¢10¢5%
Bench, Second quality ..... 60¢10@50¢10¢5%
Bailey's (Stanley R. & L. Co) ..... 50&10@50&10&10%
Gage Self Setting 35%

Iron Planes—

Bailey's (Stanley R. & L. Co) ..... 50&10@50&10&10%
Chaplin's Iron Planes ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 25&10@25&10&10%
Sargent's ..... 50&10&10%

Plane Irons—

Wood Bench Plane Irons ..... 30¢5@30¢10¢5%
Buck Bros. 30%
Stanley R. & L. Co ..... 50&10@50&10&10%
L. & I. J. White ..... 20&5@25%

Planters, Corn, Hand.

Kohler's Eclipse ..... ₱ doz. $9.00

Plates—

Felloe ..... lb. 3¾@4¢
Self-Sealing Pie Plates (S. S. & Co.), ₱ doz. $2.00 ..... 50%

Pliers and Nippers—

Button Pliers ..... 70¢10@75¢
Gas Burner, per doz., 5 in., $1.15@ $1.20; 6 in., $1.35@$1.45
Gas Pipe ..

7	8	10	12-in.
$1.75	$2.00	$2.75	$3.75

Acme Nippers ..... 50@50&5%
Bernard's:
Parallel Pliers, &c 35%
Paragon Pliers ..... 50&5%
Lodi Pliers ..... 50&5%
Elm City Fence Pliers 35%
Cronk Hanger Co.:
American Button ..... 75&10%
Cronk's 60%
Improved Button ..... 70&10%
Stub's Pattern 50%
Combination and others 35%
Heller's Farriers' Nippers, Pincers, and Tools 50&50&5%
P., S. & W. Tinners' Cutting Nippers, 30@50&10%
Swedish Side, End and Diagonal Cutting Pliers 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40%

Plumbs and Levels—

Plumbs and Levels ..... 75@75¢10%
Davis Iron, Machinist Nos. 1 to 14 ..... 20%
Davis Iron, Adjustable Nos. 6 to 49 ..... 35%
Disston's 70%
Pocket Levels ..... 75&10&10@75&10%
Stanley R. & L. Co ..... 70&10@70&10&10%
Stanley's Duplex ..... 25&10@25&10&10%
Woods' Extension 33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₱ doz., No. 1, $7.20; No. 2, $11.00 No. 3, $11.00; No. 4, $14.50 ..... 50%

Points, Glaziers'—

Bulk and 1 lb. papers ..... lb. 10½¢@...
½-lb. papers ..... lb. 11¢ @...
¼-lb. papers ..... lb. 11½¢@...

Pokes, Animal—

Ft. Madison Hawkeye ..... ₱ doz. $3.25
Ft. Madison, Western ..... ₱ doz. $3.75

Police Goods—

Manufacturers' Lists ..... 25@25&5%
Tower's 25%

Polish—Metal—

Prestoline Liquid, No. 1 (½ pt.), ₱ doz. $3.00; No. 2 (1 qt.), $9.72 ..... 40%
Prestoline Paste ..... 40&10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gr. $4.50; ½ ℔ boxes, ₱ doz. $1.25; 1 ℔ boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz. $1.25; ₱ gr. $12.00.
Barkeepers' Friend Metal Polish, ₱ doz. $1.75; ₱ gr. $18.00.
Wynn's White Silk, ¼ pt. cans, ₱ doz. $2.00

Stove—

Black Eagle Benzine Paste, 5 ℔ cans ... ₱ ℔ 10¢
Black Eagle, Liquid, ¼ pt. cans. ... ₱ doz. 75¢
Black Jack Paste, ¾ ℔ cans, ₱ gro. $9.00
Ladd's Black Beauty, gr. $10.00 ..... 50%
Joseph Dixon's, ₱ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ₱ ℔ 8¢
Fireside ..... ₱ gr. $2.50
Gem, ₱ gr. $4.50 ..... 10%
Japanese ..... ₱ gr. $3.50
Jet Black ..... ₱ gr. $3.50
Peerless Iron Enamel, ¼ pt. cans ... ₱ doz. $1.50
Wynn's:
Black Silk, 5 ℔ pail ..... each 70¢
Black Silk, ½ ℔ box ..... ₱ doz. $1.00
Black Silk, 5 oz. box ..... ₱ doz. $0.75
Black Silk, ¼ pt. liq ..... ₱ doz. $1.00

Poppers, Corn—

Round or Square:
1 qt ..... gro. $7.00@$7.50
1½ qt ..... gro. 9 50@ 10 00
2 qt ..... gro. 10.50@ 11.00

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—Glue—

Enameled 45%
Tinned 40%

Powder—

In Canisters:
Duck, 1 lb. each 45c
Fine Sporting, 1 lb each 75c
Rifle, ½-lb. each 15c
Rifle, 1-lb. each 25c
In Kegs:
Duck, 6½-lb. kegs $2.25
Duck, 12½-lb. kegs $4.25
Duck, 25-lb kegs $8.00
Rifle, 6½-lb kegs $1.25
Rifle, 12½-lb. kegs $2 25
Rifle, 25-lb. kegs $4.00
King's Semi-Smokeless:
Keg (25 ℔ bulk) $8 50
Half Keg (12½ ℔ bulk) $3.50
Quarter Keg (6¼ ℔ bulk) $1.90
Case 24 (1 ℔ cans bulk) $8.50
Half case 12 (1 ℔ cans bulk) $4 50

King's Smokeless:	Shot Gun	Rifle
Keg (25 ℔ bulk)	$12 00	$15.00
Half Keg (12½ ℔ bulk)	6.25	7.75
Quarter Keg (6¼ ℔ bulk)	3.25	4.00
Case 24 (1 ℔ cans bulk)	14.00	17 00
Half case 12 (1 ℔ cans blk)	7.25	8 75

Presses—Fruit and Jelly—

Enterprise Mfg. Co. ..... 30@25%

Pruning Hooks and Shears—See *Shears.*

Pullers, Nail—

Cyclops ..... 40@40&10%
Diamond B, No. 2, case lots, ₱ doz. $6 00
Diamond B, No. 2, case lots, ₱ doz. $5.50
Giant, No. 1, ₱ doz. $18; No. 2, $15.50; No. 3, $15 ..... 40%
Miller's Falls, No. 3, per doz. $12.00 ..... 15&10%
Pelican ₱ doz. $9.00 ..... 40&10%
Scranton, Case Lots:
No. 1 (large), ₱ doz. $6.50; No. 2 (large), $5.75; No 3 (small), $5.00; No. 2-B (large), $5.50; No. 3-B (small), $4.00; No. 2-D (large), $4 50; No 3-D (small) $4 00.

Pulleys—Single Wheel—

Inch	*2*	*2½*	*3*
Awning ..doz.	$0.45	.70	.95
Inch	*2*	*2½*	*3*
Hay Fork, Swivel or Solid Eye ..... *doz.*			$1.35@1.50

Hot House..doz	$0.65	.90	1.20
Inch	1¼	1½	1¾	2
Screw ..... *doz.*	$0.15	.20	.25	.30
Inch	1¾	2	2¼	2½
Side ..... *doz.*	$0.30	.40	.55	.60
Inch	1½	1¾	2	2½
Tackle ..... *doz.*	$0.30	.45	.65	1.10

Stowell's:
Ceiling or End, Anti-Friction 60%
Dumb Waiter, Anti-Friction ..... 60&10%
Hay Fork, Anti-Friction, 5-in. Wheel, ₱ doz. $12.00 ..... 50%
Electric Light 60%
Side, Anti-Friction ..... 60&10%

Sash Pulleys—

Common Frame; Square or Round End per doz., 1¾ *in.,* 13c.; 2 *in.,* 16c.
Auger Mortise, no Face Plate, per doz. 1¾ *in.,* 12c.; 2 *in.,* 15c.
Auger Mortise, with Face Plate, per doz., 1¾ *in.,* 13c.; 2 *in.,* 15½c.

Acme.....1¾ in., 16¢; 2 in., 19¢
Common Sense, 1¾ in.... ₱ doz., 18¢; 2 in., 20¢.
Fox All-Steel, Nos. 3 and 7, 2½ in..... ₱ doz. 25¢
No. 9, 1¾ in..... ₱ doz. 20¢
Extra for Plated Finish....₱ doz. 20¢
Extra for Anti-Friction Bronze Bushing..... ₱ doz 10¢
Grand Rapids All Steel Noiseless....40%
Ideal No. 13.....1¾ in., ₱ doz., 16¢
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy....1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern.....60@ ...%
Pitcher Spout.....75@ ...%
Wood.....50@50¢10%
Pump Leathers, Lower and Plunger Valves—Per gro.:

Inch...	2	2¼	2½	2¾
	$2.20	2.50	2.75	3.00
Inch..	3	3¼	3½	3¾	4
	$3.30	3.60	3.85	4.10	4.40

Barnes Dbl. Acting (low list)..... 50%
Flint & Walling's Fast Mail (low list).50%
Flint & Walling's Pitcher Spout.....75%
Loud's Suction Pumps, U. S. Co.....20%
Myer's Pumps, low list 50%
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co.....30%

Punches—

Revolving (4 tubes)...doz. $3.75@4.25
Saddlers' or Drive, good...doz. 65@70c
Spring, single tube, good quality... $1.65@1.75
Bemis & Call Co.'s Cast Steel Drive....50%
Bemis & Call Co.'s Check.....55%
Bemis & Call Co.'s Spring.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Steel Screw, B & K. Mfg. Co.....40%
Tinners' Hollow, P., S. & W. Co..... 35@35&5%
Tinners' Solid, P., S. & W.Co., ₱ doz., $1.44.....60%

Rail— Barn Door, &c.—

Cast iron, Barn Door: Flange Screw Holes for Rd. Groove Wheels:

½	⅝	¾ In.
$1.70	$2.10	$5.00 100 feet.

Angular for Sq. Groove Wheels:

Small.	Med.	Large.
$1.60	1.95	2.70 100 feet.

Sliding Door, Brazed Wr't Iron, fl, 6½c
Sliding Door, Iron Painted....2½@3c
Sliding Door, Wrought Brass, 1¼ in..... lb. 36c..30%
Cronk's Double Braced Steel Rail, ₱ foot..... 3¾¢
Cronk's O. N. T. Rail..... 3¼¢
Lanes' O. N. T., ₱ 100 ft., 1 inch....$2.75
Lanes' Standard, ₱ 100 ft..... 3.75
Lawrence Bros.' ..... ₱ ft. 4¼¢
McKinney's None Better..... ₱ ft. 3¾¢
McKinney's Standard..... ₱ ft. 4 ¢
Stowell's Cast Rail..... 1½¢
Stowell's Steel Rail, Plain..... 2½¢
Stowell's Wrought Bracket, Plain....3¼¢

Rakes—

Net Prices, Malleable Rakes:

	10	12	14	16-tooth
Shank	$1.50	1.60	1.75	1.85
Socket	.1.65	1.80	1.95	2.10

Sept. 1, 1900, List:
Cast Steel.....70¢5¢2%
Malleable.....70¢10¢75¢5%
Lawn Rakes, Metal Head, per doz., 20 teeth.....$3.25@3.50
24 teeth.....$3.60@3.75
Fort Madison Red Head Lawn.....$3 25
Fort Madison Blue Head Lawn.....$3 00
Jackson Lawn, 29 and 30 teeth ₱ doz. $4.00
Kohler's:
Lawn Queen, 20-tooth, ₱ doz....$3.60
Lawn Queen, 24-tooth, ₱ doz....$4.75
Paragon, 20-tooth, ₱ doz.....$2.85
Paragon, 24-tooth, ₱ doz.....$3.00
Steel Garden, 14-tooth, ₱ doz.....$3.00
Malleable Garden, 14-tooth ₱ doz. $2.25

Rasps, Horse—

Disston's.....75%
Heller Bros.....70&5%
McCaffrey File Co Horse Rasps.60&10&5%
New Nicholson Horse Rasp.....70&10%
See also *Files.*

Razors—

Boracic.....70%
Fox Razors, No. 42... ₱ doz. $30.00
Fox Razors, No. 44, ₱ doz. $24.00
Fox Razors, No. 82, Platina, ₱ doz $24.00
} 40%
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 00.....$12.00
All other Razors.....40%
Safety Razors.....40%

Razor Strops—

See *Strops, Razor.*

Reels— Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Populo and Salmon, Single Action, Multiplying and Quadruple, all sizes.....25%
Hendryx Single Action Series, 102P and PN, 202P and PN, 104 PR and PRN, 202 PR and PRN, 304 P and PN, 00304P and PN, 502 and 502N, 502 and 502N, 02084N, Competitor.50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N, 2904P and PN, 002904PN, 0924 and 0924N, 5009N and PN.....40&10%
Shakespeare, Style C.....25%

Registers—

List Sept. 2, 1901.

Black Jap
White Jap
Bronzed
Nickel Plated
Electro Plated
} 70¢10¢5%

There is a good deal of irregularity in prices of Registers, especially in Black Japanned, and some jobbers and manufacturers are using the old list.

Revolvers—

Single Action.....80@85c
Double Action.....$1.30
Automatic.....$2.75
Hammerless.....$3.25

Riddles, Grain or Sand—

16 in. per doz.....$2.00@$2.25
17 in. per doz.....$2.25@$2.50
18 in. per doz.....$2.50@$2 75

Rings and Ringers—

Bull Rings—

	2	2½	3 Inch.
Steel	$0.80	0.90	0.95 doz.
Copper	1.10	1.30	1.50 doz.

Hog Rings and Ringers—

Hill's Rings....gro. boxes, $4.00@4.50
Hill's Ringers, Gray Iron. doz. 50@55c
Hill's Ringers, Mal. Iron, doz. 75@80c
Blair's Rings.....per gro. $5.75@6.00
Blair's Ringers...per doz. $0.65@ .70
Brown's Rings....per gro. $6.00@6.25
Brown's Ringers..per doz. $1.00@1.10
Rapid Rings.....₱ gro. $6.00
Rapid Ringers.....₱ doz. $3.50

Rivets and Burrs—

Copper.....50@50&5%
Iron or Steel:
Tinners'.....70@70¢10%
Miscellaneous.....70@70¢10%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rollers—

Acme Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....50&10&10%
Cronk's Stay.....66⅔%
Cronk's Brinkerhoff.....66⅔%
Lane's, Stay.....33⅓%
Stowell's Barn Door Stay...₱ doz. $1.25

Rope—

Manila, 7-16 in. and larger lb. 11¼@11½c
Manila.....¾-inch. lb. 11¾@12 c
Manila ¼ & 5-16 in.....lb. 12¼@12½c
Manila, Tarred Rope, 15 thread.. lb. 11¼@11½c
Manila Hay Rope. Medium.....lb. 11¼@11½c
Sisal, 7-16 in. and larger lb. 9 @ 9¼c
Sisal.....¾-inch., lb. 9½@ 9¾c
Sisal, ¼ and 5-16 in.... lb. 10 @10¼c
Sisal, Hay Rope, 2 to 10 ply.....lb. 9¼@ 9½c
Sisal, Tarred, Medium Lath Yarn.....lb. 8¾@ 9¼c
Cotton Rope:
Best.....¼-in. and larger lb. 13½c
Medium ..¼-in. and larger lb. 11 c
Com.....¼-in. and larger lb. 9 c
Jute Rope:
Thread No. 1, ¼ in. and up lb. 6½c
Thread No. 2, ¼-in. and up lb. 6 c
Yarn, ¼ in and up..... lb. 5½c

Wire Rope—

Galvanized.....25c7½%
Plain.....30c7½%

Ropes, Hammock—

Covert Mfg. Co.....45&2%
Covert Saddlery Works.....60&5%

Rules—

Boxwood...75c10c10c10c10@75c10c10c10c10c10&5%
Ivory...35c10c10@40c10c10c10c10c10%
Chapin-Stephens Co.:
Boxwood.....75&10&10@75&10&10&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Stanley R. & L. Co.:
Boxwood...75&10&10@75&10&10&10%
Ivory.....35&10@35&10&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—

See *Paper and Cloth.*

Sash Cords—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—

See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers Sausage.*

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Acme:
Circular.....50@50&10%
Band.....50&10@60%
Cross Cuts.....35&5%
Mulay, Mill and Drag.....50&10%
One-Man Saw.....40%
Wood Saws.....40%
Hand, Compass, &c.....40%
Disston's:
Circular Solid and Inserted Tooth.50%
Band 2 to 14 in. wide.....60%
Band ¼ to 1¾.....70%
Crosscuts.....45@45&10%
Narrow Crosscuts.....50@50&10%
Mulay, Mill and Drag.....50%
Framed Woodsaws.....35@35&7½%
Woodsaw Blades.....40@40&7½%
Woodsaw Rods.....25%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8.....25@25&7½%
Hand Saws, Nos 7, 107, 107½, 3, 1, 0, 00, Combination.....30@30&7½%
Compass, Keyhole, &c.....25@25&7½%
Butcher Saws and Blades..35@35&7½%
C. E. Jennings & Co.'s.:
Back Saws.....25%
Butcher Saws.....35%
Compass and Key Hole Saws.....25%
Framed Wood Saws.....40%
Hand Saws.....25@30%
Wood Saw Blades.....45%
Peace:
Circular and Mill.....50%
Cross Cuts, list Jan. 1, '99.....50%
Hand, Panel and Rip.....30%
Richardson:
Circular and Mill.....50%
Hand, &c.....30%
X Cuts, list Jan. 1, '99.....50%
Simonds':
Circular Saws.....50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts.....40&10%
Gang Mill, Mulay and Drag Saws..50%
Band Saws.....50%
Back Saws.....25@25&7½%
Butcher Saws.....35@35&7½%
Hand Saws.....25@25&7½%
Compass, Keyhole, &c.....25@25&7½%
Wood Saws.....35@35&7½%

Hack Saws—

Disston:
Concave Blades.....25%
Keystone.....30%
Hack Saw Frames.....30%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180, 330.....40%
Hack Saws, Nos. 175, 180, 330, complete.....40%
Griffin's Hack Saw Frames.....45%
Griffin's Hack Saw Blades.....45%
Star Hack Saws and Blades.....15&10%

Scroll—

Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18: with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete, $4.00.....15&10%

Scale Beams—

See *Beams, Scale.*

Scales—

Family, Turnbull's.....30@30c10%
Counter:
Hatch, Platform, ¼ oz to ½ lbs. doz $5.50
Two Platforms, ½ oz to 8 lbs. ..... doz. $16 00
Union Platform, Plain..$1.70@1.90
Union Platform, Striped $1 85@2.15
Chatillon's:
Eureka.....25%
Favorite.....40%
Grocers' Trip Scales.....50%
Pelouze Scales—Household, Counter, Confectionery, Postal, Ice, &c.....70%
"The Standard" Portables.....45%
"The Standard" R. R. and Wagon....50%

Scrapers—

Box, 1 Handle.....doz $2.25@2.50
Box, 2 Handle.....doz. $3.75@4.00
Ship, No 1, doz. $3.50; No 2, $2.25@2.40
Adjustable Box Scraper (S. R. & L. Co.) $6.00.....30&10%

Screens, Window, and Frames—

Bonanza Window Screens....60@60&5%
Fiver Pattern Window Screen.60@60&5%
Maine Window Screen Frames 40&10&5%
Perfection Window Screens....60@60&5%
Phillips' Window Screen Frames..... 60&10&5%
Porter's Hummer Window Screens..... 60@60&5%
Porter's Klondike Window Screens..... 60&2½@60&7½%
Wabash Spring Adj. Screen.....50%
See also *Doors.*

Screw Drivers—

See *Drivers, Screw.*

Screws—Bench and Hand—

Bench, Iron..doz. 1 in., $3.00@3.75; 1¼, $3.50@3.75; 1¼, $4.00@4.50
Bench, Wood, Beech..doz. $3.50@2.75
Hand, Wood.....30&5@40%
Hand, R. Bliss Mfg Co.....35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Oct. 1, '99.....75&15@...%
Coach and Lag, Gimlet Point, list Oct. 1, '99.....75&10@...%
Hand Rail, list Jan. 1, '81.60&10@...%

Jack Screws—

Standard List.....75@75&10%
Millers Falls.....50&10&10%
Millers Falls, Roller.....50&10%
P., S. & W.....50@50&5%
Sargent.....70&10%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron.50@50&10%
Flat or Round Head, Brass..... 50@50&10%

Set and Cap—

Set (Iron or Steel).....70&10%
Sq. Hd. Cap.....65&10%
Hex. Hd. Cap.....65&10%

Wood—

List Jan. 1, 1900.
Manufacturers' printed discounts:
Flat Head, Iron.....87½@90%
Round Head, Iron.....85@87½%
Flat Head, Brass.....85@87½%
Round Head, Brass.....82½@85%
Flat Head, Bronze.....75@80%
Round Head, Bronze.....72½@77½%
Drive Screws.....87½@90%
NOTE.—*Extra 5@10% often given.*

Scroll Saws—See *Saws, Scroll.*

Scythes—

Grass Scythes: See *Trade Report.*

Scythe Snaths—

See *Snaths, Scythe.*

Seeders— Raisin—

Enterprise.....25@30%

Sets— Awl and Tool—

Brad Awl and Tool Sets:
Wood Hdle., 10 Awls doz. $2.00@2.25
Wood Hdle., 14 Awls, 6 Tools.... doz. $2.50@2.60
Aiken's Sets, Awl and Tools:
No. 20, ₱ doz. $10.00.....50&10&10%
Fray's Adj. Tool H dls...Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior:
No. 1, $7.50; No. 2 $4.00; No. 3, $5.50.....30&10@30&10&10%

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe.... ₱ doz.....$9.00

Nail—

Square.....per gro. $2 50
Round, Blk. and Pol., assorted..... gro. $1.80@2.50
Octagon.....gro. $4.25@4.75
Knurled, Good.....gro. $6.00@6.50
Buck Brothers.....37½%
Cannon's Diamond Point, ₱ gr. $13..25%
Mayhew's.....per gro. $9.00
Snell's Corrugated, Cup Pt. per gro. $7.50
Snell's Knurled, Cup Pt....per gro $7.50

Rivet—

Regular list.....70@70¢10&5%

Saw—

Aiken's:
Genuine.....₱ doz. $5.50@6.00
Imitation.....₱ doz. $3.00@3.10
Atkin's.:
Criterion.....10%
Adjustable.....40%
Bemis & Call Co's.:
Cross Cut.....30%
Hammer, new Pat.....45%
Plate.....20%
Spring Hammer.....30%
Disston's Star and Monarch.....25%
Morrill's No. 1, $15.00.....40&20%
Nos. 3 and 4, Cross Cut, $33....50&20&5%
No. 5, Mill, $31.00.....50&30& 0%
No. 10, $15.50.....40&20%
No. 11, $16.00.....40&20%
Taintor Positive, ₱ doz. $18.....60%

Sharpeners Knife—

Chicago Wheel & Mfg. Co.....65%
Smith & Hemenway Co.....70&5%
Tanite Mills ₱ gross, $14.40....35@33⅓%

Sharpeners Skate—

Eureka Skate Sharpener.....₱ doz. $2.00

Shaves, Spoke—

Iron.....doz. $1 00@1 25
Wood.....doz. $1.75@2.00
Bailey's (Stanley R. & L. Co.).....50&10%
Goodell's, ₱ doz. $9.00.....15&10%

Shears—

Cast Iron...

	7	8	9 in.
Best	.$16.00	18.00	20.00 gro.
Good	$13.00	15.00	17 00 gro.
Cheap	$5.00	6.00	7.00 gro.

Straight Trimmers, &c.:
Best quality, Jap.....70@70¢10%
" *Nickel*.....60@60¢10%
Fair qual. Jap.....80@80¢5%
" *Nickel*.....75@75¢10%
Tailors' Shears.....40@40¢10%
Acme Cast Shears.....40@40&5%
Heinisch's Tailors' Shears.....40%
Wilkinson's Hedge.....50%
Wilkinson's Sheep.....1900 list, 50%

Tinners' Snips—

Steel Blades.....20¢10%
Steel Laid Blades.....50¢10%
Forged Handles, Steel Blades, Berlin..40@40&10%
Jennings & Griffin Mfg. Co's, 7 to 10 inch.....50%
Niagara Snips.....40%
P. S. & W. Co.....20%

Pruning Shears and Tools—

Cronk's Grape Shears.....33⅓%
Cronk's Pruning Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00....25@25&10%
Disston's Pruning Hook, ₱ dos. $12.00 .....25@25&10%
John T. Henry Mfg. Company:
Pruning Shears, all grades..40@40&5%
Orange Shears.....50&10@50&20%
Grape.....40&10@50%
Tree Pruners.....75%
Nagley's Pruning Shears.....10&5%
P. S. & W. Co.....33⅓%

Sheaves—Sliding Door—

Stowell's Anti-Friction.....50%
Patent Roller Hatfield's, Sargent's list, 75&10&10%
Reading.....70&10@75%
R. & E. list.....33⅓%
Wrightsville, Hatfield Pattern.....80%

Sliding Shutter—

Reading list.....70&10@75%
R. & E. list.....33⅓%
Sargent's list.....50&10&5&10%

Shells— Shells, Empty—

Brass Shells, Empty:
First quality, all gauges.....60&5%
Climax, Club, Rival, 10 and 12 gauge.. 65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Smokeless 10, 12, 16 and 20 gauge. 33⅓&10%
Blue Rival, New Climax, Primrose Club, Yellow Rival, 10, 12, 16 and 20 gauge.....15%
Climax Club, League, Rival, 14, 16 and 20 gauge ($7.50 list).....20&5%
Climax Club, League, Rival 10 and 12 gauge.....25&5%
Defiance, High Base, New Victor, Nitro, Repeater, 10, 12 16 and 20 gauge.....15%
Trap and Metal Lined, 10, 12, 16 and 20 gauge.....33⅓&10&5%

Shells, Loaded—

Loaded with Black Powder.....40&5%
Loaded with Smokeless Powder, medium grade.....40&10&5%
Loaded with Smokeless Powder, high grade.....40&10&10&5%

Shoes, Horse, Mule, &c.—

F. o. b., Pittsburg.
Iron.....per keg $3.50
Steel.....per keg 3.25
Burden's, all sizes, ₱ keg..... $3.60

Shot—

Drop, up to B, 25-lb. bag.....$1.50
Drop, B and larger, per 25-lb. bag.....$1.75
Buck, 25-lb. bag.....$1.75
Chilled, 25 lb. bag.....$1.75
Dust Shot, 25-lb. bag.....$2.00
Markle's Chilled.....$1.75
Tatham's Chilled.....$1.75

NOTE.—*There is some irregularity in prices because jobbers often undersell the manufacturers.*

Shovels and Spades—

No. 2, Polished, Sq. or Rd. Point, D or L Handle:

	A1, 1st Grade.	B2, 2d Grade
Plain Back	$10 50	$9 60
Strap Back	9.90	9.00
Cleveland Pat'n	10.20	9.30

	C3, 3d Grade.	D4, 4th Grade
Plain Back	$8.70	$8.10
Strap Back	8.10	7.50
Cleveland Pat'n	8.40	7.80

All other sizes add 30c doz.
Black deduct 30c doz.

Note.—The above are the regular Association prices but are often shaded by

Jobbers $0.50@1.00, and Common, Plain Back Shovels aregenerally sold by jobbers at about $6.75.

Sieves and Sifters—

Hunter's Imitation, gro. $11.00@11.50

Buffalo Metallic Blued, S. S. & Co., ₱ gr.:

14&16	16&18	18&20
$12.90	$13.80	$15.00

F. J. Meyers' Mfg. Co.:

Eclipse ₱ gr. $11.00
Electric Light ₱ gr. $11.00
Hunter's Genuine ₱ gr. $12.50
No Name, Hunter's ₱ gr. $11.00
Standard ₱ gr. $11.00

Shaker (Barler's Pat.) Flour Sifters, ₱ doz., $3.00 ..... 50%

Sieves, Tin Rim—

Per dozen

Mesh	14	16	18	20
Black, full size	$0 95	.98	1.00	1.10
Plated, full size	.$1.05	1.08	1.10	1.20
Black, scant	$0.78	.80	.83	

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.

Mesh 18, Nested, doz ..... $0.65@0.75
Mesh 20, Nested, doz ..... .75@ .85
Mesh 24, Nested, doz ..... .90@1.00

Sinks—

Cast Iron—

Standard list ..... 65@65&10%

NOTE.—*There is not entire uniformity lists used by jobbers.*

Wrought Steel—

New Era, Galv'd and Enameled... 70&5%
New Era, Painted ..... 60&10%
L. & G. Mfg. Co., Galvanized 50%
L. & G. Mfg Co. Enameled 50%

Skeins, Wagon—

Cast Iron ..... 70@10@75%
Malleable Iron ..... 40@10@50%
Steel ..... 40@40&10%

Slates—

Factory Shipments.

"D" Slates ..... 50@10@10@10%
Unexcelled, etc., Noiseless Slates .60 @ 8 tens %
Victoria, etc., Noiseless Slates..60@ 7 tens @5%
Wire Bound ..... 50@10@5%
Web Hinge 50%

Slaw Cutters—See *Cutters.*

Slicers, Vegetable—

Sterling $ 2.00 ..... 33⅓

Snaps, Harness—

German ..... 40@40@10%

Covert Mfg. Co.:

Decoy ..... 35&2%
High Grade ..... 45&2%
Jockey ..... 40&2%
Trojan ..... 45&2%
Yankee ..... 35&2%
Yankee, Roller ..... 30&2%

Covert's Saddlery Works:

Crown 60%
German 60%
Model 60%
Triumph 60%

W. & E. T. Fitch Co.:

Bristol ..... 40&10%
Empire ..... 50&5%
German 40%
National ..... 50&5%
Perfect 40%
Clipper ..... 50&5%
Champion 40%
Security 40%
Victor ..... 60&5%

Oneida Community:

Solid Steel ..... 65@65&10%
Solid Swivel ..... 65&10@65&10&10%
Sargent's Patent Guarded ..... 66⅔&10%

Snaths—

Scythe ..... 45c&5&2½

Snips, Tinners'—See *Shears.*

Soldering Irons—

See *Irons, Soldering.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Silver Plated—

Good Quality ..... 50@10@60@10@5%
Cheap ..... 60@60@10%

International Silver Co.:

1847 Rogers Bros. and Rogers & Hamilton ..... 40&10%
Rogers & Bro., William Rogers Eagle Brand ..... 50&10%
Anchor, Rogers Brand 60%
Wm. Rogers & Son ..... 60&10%

Simeon L. & Geo. H. Rogers Co.:

Silver Plated Flat Ware 60%
No. 77 Silver Plated Ware ..... 60&10%

Miscellaneous—

German Silver ..... 60@10@60@10@10%

Simeon L. & Geo. H. Rogers Co.:

German or Nickel Silver, Special list ..... 10&10%

Tinned Iron—

Teas ..... per gro. 45@5.0c
Tables ..... per gro. 90c@$1.00

Springs—

Door—

Gem (Coil) 20%
Star (Coil) 30%
Torrey's Rod, 39 in. ₱ doz. $1.10@1.25
Victor (Coil) ..... 50&10&10%

Carriage, Wagon, &c.

1¼ in. and Wider:

Black or ⅛ Bright, lb 5c
Bright, lb 5½c

Painted Seat Springs:

1½ x 2 x 26 and smaller, per pr 45@48c
1½ x 2 x 28 per pr ..... 52½@56c
1½ x 3 x 28 and narrower, per pr. 70@78c

Sprinklers, Lawn—

Enterprise ..... 25@20%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24 ..... 30%

Squares—

Nickel plated ..... } List Jan. 5, 1900
Steel and Iron ..... } 70@10@75%
Rosewood tidl Try Square and T-Bevels ..... 60@10@10@70%
Iron Hdl. Try Squares and T-Bevels. 40@10@40@10@10%

Disston's Try Sq. and T-Beve's ..... 60&10%
Winterbottom's Try and Miter ..... 50&10%

Squeezers—

Lemon—

Wood, Common, gro., No. 0, $5.25 @$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap ..... doz. $2.00@2.75
Good Grade ..... doz. $3.00@3.50
Tinned Iron ..... doz. $0.75@1.25
Iron, Porcelain Lined doz. $2.90@3.25
Jennings' Star ..... ₱ doz. $1.85@1.90

Staples—

Barbed Blind ..... lb. 7@7¼c
Electricians', Association list ..... 80c@10&10&10%
Fence Staples, same price as Barbed Wire. See Trade Report.
Poultry Netting, Staples ..... per lb.

Grand Crossing Tack Co.'s list.... 80&10%

Steels, Butchers'—

Dick's 30%
Foster Bros' 30%
Hartzell Cutlery Co ..... 30&5%
C. & A. Hoffmann's 40%

Steelyards ..... 35@25&10%

Stocks and Dies—

Blacksmiths' ..... 40@40&10%
Gardner Die Stocks No. 1 ..... 50%
Gardner Die Stocks, larger sizes 40%
Green River 25%
Lightning Screw Plate 25%
Little Giant 25%
Reece's New Screw Plates ..... 25@30%
Curtis Reversible Ratchet Die Stock. 25%

Stone—

Scythe Stones—

Chicago Wheel & Mfg. Co:

Gem Corundum, 10 inch, $8.00 per gro., 12 inch, $10.80

Pike Mfg. Co. 1901 list:

Black Diamond S. S.... ₱ gro. $12.00
Lamoille S. S ..... ₱ gro. $11.00
White Mountain S. S.... ₱ gro. $9.00
Green Mountain S. S.... ₱ gro. $6.00
Extra Indian Pond S. S. ₱ gro. $7.50
No. 1 Indian Pond S. S.. ₱ gro. $7.00
No. 2 Indian Pond S. S.. ₱ gro. $4.50
Leader Red End S. S.... ₱ gro. $4.50
Balance of 1901 list 33⅓& 25%

Oil Stones, &c.

Chicago Wheel & Mfg. Co., 1901 list:

Gem Corundum Oil, Double Grit 50%
Gem Corundum Axe, Single or Double Grit 55%
Gem Corundum Slips 55%
Gem Corundum Razor Hones 50%

Pike Mfg. Co. 1901 list:

	₱
Arkansas Stone, No. 1, 3 to 5 in.	$2.80
Arkansas Stone, No. 1, 5 to 8 in.	$3.50
Arkansas Slips No. 1	$4.00
Lily White Washita 4 to 8 in.	60¢
Rosy Red Washita, 4 to 8 in.	60¢
Washita Stone, Extra, 4 to 8 in.	50¢
Washita Stone, No. 1, 4 to 8 in.	40¢
Washita Stone, No. 2, 4 to 8 in.	30¢
Lily White Slips	90¢
Rosy Red Slips	90¢
Washita Slips, Extra	80¢
Washita Slips, No. 1	70¢
India Oil Stones (entire list)	25%
Hindostan No. 1, Regular	₱ ℔ 8¢
Hindostan No. 1 Small	₱ ℔ 10¢
Axe Stones (all kinds)	33⅓& 25%
Turkey Oil Stones, ex. 5 to 8 in.	₱ ℔ 80¢
Queer Creek Stones, 4 to 8 in.	30¢
Queer Creek Slips	30¢
Sand Stone	40%

Belgian, German and Swaty Razor Hones 40%

Natural Grit Carving Knife Hones, ₱ doz. $3.00

Quick Edge Pocket Knife Hones, ₱ doz. $3.00

Mounted Kitchen Sand Stone, ₱ doz. ..... $1.80 } 33⅓& 25%

Tanite Mills:

Emery Oil, ₱ doz. $5.00 ..... 50@60%

Stoners—

Cherry—

Enterprise ..... 25@30%

Stops, Bench—

Millers Falls ..... 15&10%
Morrill's... ₱ doz., No. 1, $10.00.. 50& 20%
Morrill's, No. 2, $11.00 ..... 50&10%

Stops, Window—

Ives' Patent ..... 25&5%

Stove Boards—

See *Boards, Stove.*

Stove Polish—See *Polish, Stove.*

Strainers, Pump—

Diamond Joe Pump Strainers..per doz. 75¢

Straps, Box—

Cary's Universal, case lots ..... 20&10%

Stretchers, Carpet—

Cast Iron, Steel Points....doz. 55@65c
Socket ..... doz. $1.75

Strops, Razor—

Smith & Hemenway Co 70%

Stuffers, Sausage—

Enterprise Mfg. Co ..... 25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97 ..... 30%

Tacks Brads, &c.—

List Jan. 15, '99.

Carpet Tacks, American 90c&25@ ....%
American Cut Tacks....90c&20@ ....%
Swedes Iron Tacks ..... 90c&30@ ....%
Swedes Upholsterers' Tacks ..... 90c&10@ ....%
Gimp Tacks ..... 90c&20@ ....%
Lace Tacks ..... 90c&10@ ....%
Trimmers' Tacks ..... 90c&25@ ....%
Looking Glass Tacks ..... 70c&10%
Bill Posters' and Railroad Tack.... 90c&10@ ....%
Hungarian Nails ..... 80c&15%
Common and Patent Brads..... 80c&10%
Trunk and Clout Nails ..... 80c&5%

NOTE.—*The above prices are for Straight Weights.* An extra 5% is given *Star Weights* and an extra 10&5% on *Standard Weights.*

Miscellaneous—

Double Point Tacks.....90c&6 or 7 tens
Steel Wire Brads, R. & E. Mfg. Co.'s list ..... 50c&10@60%

See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co 30-gal. $3.20
Emerald, S. S. & Co 60-gal., $4 00
Queen City S. S. & Co., 0-gal $3.50
Queen City S. S. & Co., 60-gal $4.25

Tapes, Measuring—

American Asses' Skin ..... 40c&10@30%
Patent Leather ..... 25@30c&5%
Steel ..... 40@40c&5%
Chesterman's ..... 25@25c&5%
Eddy's Steel ..... 40@40&5%
Eddy's Metallic ..... 33⅓@33⅓&5%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899 ..... 35%
Lufkin's Steel ..... 33⅓@35%
Lufkin's Metallic ..... 30@30&5%

Teeth Harrow—

Steel Harrow Teeth, plain or headed, base per lb 2¼c

Thermometers—

Tin Case ..... 80c&10@30c&10c&5%

Ties, Bale—Steel.

Standard Wire ..... 50c&10c&5%

Ties, Wall—

Cleveland Wire Spring Co.:

Galv. Steel 5-32 x 6½ in. ₱ 1000. $10.00
Galv. Steel 5-32 x 8½ in. ₱ 1000. $11.00
Galv. Steel 5-32 x 11½ in. ₱ 1000 $12.00
Galv. Steel 5 32 x 15½ in. ₱ 1000 $14.00

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Plated, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

L. & I. J. White ..... 20@20&5%

Saw—

Atkins' Cross Cut Saw Tools 40%
Simonds' Improved ..... 33⅓&5%
Simonds' Crescent 25%

Ship—

L. & I. J. White 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme ..... doz. $1.15@1.25; gro. $10.50@11.00
Harper, Champion or Paragon .... doz. $1.25@1.50; gro. $12.00@13 50

Game—

Oneida Pattern ..... 75c&10c&5@80c&5%
Newhouse ..... 45@45&5%
Hawley & Norton ..... 65&5@65&10%
Victor (Oneida Pattern) ..... 75@75&5%
Star (Blake Pattern) ..... 65&10@70&5%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes .... 8¼@9c
Mouse, Round or Square Wire ..... doz. $0.85@1.00

American Pattern French Rat and Mouse Traps—

No. 1, Detroit Marty Pattern, ₱ doz. $4.50; in ½ gro. lots, ₱ doz $4.00
No. 2, Detroit Marty Pattern, ₱ doz. $3.25; in ½ gro. lots, ₱ doz $3.00
Detroit Marty Pattern Mouse, ₱ doz. $2.00; in ½ gro. lots, ₱ doz $1.75
Diamond Joe Mouse Traps.... per doz. 60¢
Diamond Joe Rat Traps..... per doz. $1.00
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, Each $1.12½; ₱ doz. $12.00
No. 3, Rat, ₱ doz. $6.00; case of 50 $5.25 doz.
No. 3½, Rat, ₱ doz. $4.75; case of 72 $4.25 doz.
No. 4, Mouse, ₱ doz. $3.50; case of 72 $2.75 doz.
No. 5, Mouse, ₱ doz. $2.75; case of 150 $2.25
Schuyler's Rat Killer, No. 1, ₱ gr. $30.00; No. 2, ₱ gr. $30.00; Mouse, No. 3, $18.00 ..... 50%

Target—

Markle's, each $5.50

Trimmers, Spoke—

Bonney's Nos. 1 and 2 ..... 40%

Trowels—

Disston Brick and Pointing 30%
Disston Plastering 25%
Disston "Standard Brand" and Garden Trowels 40%
Never-Break Steel Garden Trowels, gro. $7.00
Peace's Plastering 30%
Rose Brick and Plastering ..... 25&5%
Woodrough & McFarlin, Plast'ring 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list 50%
Daisy Stove Trucks, Improved pattern ₱ doz. $18.50
Model Stove Trucks ..... ₱ doz. $18.50

Tubs, Wash—

	No. 1	2	3
Galvanized, per doz.	*$5.00*	*5 50*	*6.00*

Galvanized Wash Tubs (S. S. & Co.):

	No. 1	2	3	10	20	30
Per doz.	$5 25	6.00	6.75	6.50	7 25	8.00

Twine—

Miscellaneous—

Flax Twine—	*BC*	*B.*
No. 9, ¼ and ½-lb. Balls	*22c*	*21c*
No. 12, ¼ and ½-lb. balls	*18c*	*20c*
No. 18, ¼ and ½-lb. Balls	*16c*	*18c*
No. 24, ¼ and ½-lb. Balls	*15½c*	*17½c*
No. 36, ¼ and ½-lb. Balls	*15c*	*17c*
Chalk Line, Cotton, ½-lb Balls		*22@25 ½c*
Cotton Mops, 6, 9, 12 and 15 lb. to doz		*7@8c*
Cotton Wrapping, 5 Balls to lb according to quality		*10@16@17c*
American 2-Ply Hemp, ¼ and ½-lb. Balls		*12@15c*
American 3 Ply Hemp, 1-lb. Balls		*12@13c*
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine)		*8½c*
India 3-Ply Hemp, 1-lb. Balls		*8½c*
India 3-Ply Hemp, 1½-lb. Balls		*7c*
2, 3, 4 and 5-Ply Jute, ½-lb. Balls		*2½@10c*
Mason Line, Linen, ½-lb. Balls		*15c*
No. 264 Mattress, ¼ and ½-lb. Balls		*37c*
Wool, 3 to 6 ply		*5½c*

Vises—

Solid Box ..... 50@50&10%

Parallel—

Athol Machine Co.:

Simpson's Adjustable 40%
Standard 40%
Amateur 25%

Bonney's 40%
Fisher & Norris Double Screw.... 15&10%
Hollands':
Machinists' 40%
Keystone ..... 65&5%
Lewis Tool Co ..... 20@30%
Massey's Perfect ..... 15@20%
Massey's:
Clincher ..... 30@40%
Combination, Quick Adj 40%
Woodworker's ..... 15@20%
Merrill's 20%
Miller's Falls ..... 50&10&10%
Parker's:
Victor ..... 20@25%
Regulars ..... 30@25%
Vulcan's ..... 40@45%
Combination Pipe ..... 55@60%
Prentiss ..... 20@25%
Sargent's 40%
Snediker's X. L ..... 30@25%
Stephens' ..... 20@25%
Columbian Hdw. Co 40%

Saw Filers—

Bonney's, No. 1, $13; No. 3, $16 ..... 50%
Disston's D 3 Clamp and Guide, ₱ doz $30 ..... 25%
Reading 30%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 ..... 45&50%

Miscellaneous—

Bignall & Keeler Combination Pipe Vise 60%

Parker's Combination Pipe:

87 Series 60%
187 Series ..... 60&5%
No. 870 ..... 40%

Wads—Price Per M.

B. E., 11 up	*60c*
B. E., 9 and 10	*70c*
B. E., 8	*80c*
B E., 7	*80c*
P. E., 11 up	*$1.00*
P. E., 9 and 10	*1.25*
P. E., 8	*1.50*
P. E., 7	*1.50*
Ely's B E., 11 and larger	*$1.70@1.75*
Ely's P. E., 12 to 20	*$3 00@3.25*

Dis. 20@25%

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Aluminum—

S. S. & Co. Reduced List 40%

Cast Iron, Hollow—

Stove Hollow Ware:
Ground 60%
Unground 70%
White Enameled Ware:
Maslin Kettles ..... 75c&10c&5@80%
Covered Ware:
Tinned and Turned ..... 40c&10@10c&10c&5%
Enameled and Plain .50@50c&10c&5%

See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware, list July '99. 33⅓&5&10%
L. & G. Opal Enameled Ware 65%
Iron Clad Ware ..... 70&10%
Never Break Enameled.... 50&5@50&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch	*6*	*7*	*8*	*9*
Each	*45c*	*50c*	*55c*	*65c*

Steel Hollow Ware.

Avery Spiders & Griddles ..... 65@65&5%
Avery Kettles 60%
Porcelained ..... 50&5@50&10%
Never Break Spiders and Griddles ..... 65&5%
Never Break Kettles 60%
Solid Steel Spiders & Griddles. ....65&5%
Solid Steel Kettles 60%
Solid Steel Ware, Enameled ..... 50&5%

Washboards—

Solid Zinc: ₱ doz

Crescent, family size, bent frame. $3.00
Red Star, family size, stationary protector $3.00

Double Zinc Surface:

Saginaw Globe, family size, stationary protector $2.65
Cable Cross, family size, stationary protector $2.90

Single Zinc Surface:

Salad, family size, open back perforated $2.40
Saginaw Globe, protector, family size, ventilated back $2.25

Brass Surface:
Brass King, Single Surface, open back $3.00
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.00

Washers—
Leather, Axle—
Solid.....85c@10c@10@85c@10c@10%
Patent.....85c@10@85c@20%
Coil: ⅜ 1 1½ 1¼ *Inch.*
10c 11c 12c 13c *per 100*

Iron or Steel
Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers....$5.10 4.20 2.90 2.70 2.50
In lots less than one keg add ¼c per lb., 5-lb. boxes add ½c to list.

Cast Washers—
Over ½ inch, barrel lots. per lb.....
1½@1¾c

Washer Cutters—
See *Cutters, Washer.*

Washing Machines—
See *Machines, Washing.*

Water Coolers—
See *Coolers, Water.*

Wedges—
Oil Finish.....*lb. 2.90@3.10c*

Weights, Sash—
Per ton, f.o.b. factory....*$19.00@22.50*

Some Foundries make price $1@$2 lower.

Well Buckets, Galvanized
See *Pails, Galvanized.*

Wheels Well—
8-in., $1.55@1.75; 10-in., $1.80@2.10; 12-in., $2.35@2.75; 14-in., $3.75@4.65

Wire and Wire Goods—
Bright and Annealed:
6 to 9.....72½c@5@72½c@10%
10 to 18.....72½c@10@72½c@10c@5%
19 to 26.....75c@10c@2½@75c@10c@7½%
27 to 36.....75c@10c@7½@80c@2½%
Galvanized:
6 to 18.....70@70c@5%
19 to 26.....72½c@5@72½c@10%
27 to 36.....72½c@10@72½c@10c@5%
Coppered:
6 to 9.....70c@5@70c@10%
10 to 18.....70c@10@70c@10c@5%
19 to 26.....75c@7½@75c@10c@2½%
27 to 36.....75c@10@75c@10c@5%
Tinned:
6 to 14.....75@75c@7½%
15 to 18.....72½c@5@75%
19 to 26.....70c@5@70c@5c@5%
27 to 36.....70@70c@5%
Annealed Wire on Spools..70c@5@70 c@10%

Brass and Copper Wire on Spools..
60c@5@60c@10%
Brass, list Feb. 26, '98.....25%
Copper, list Feb. 26, '98.....15%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to $6.40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—
List April 1, 1901.....85c@10@...%

Wire Cloth and Netting—
Galvanized Wire Netting...35@85c5%
Painted Screen Cloth per 100 ft....
$1.00@1.10
Light Hardware Grade:
2-18 Mesh, Plain (8c. list) sq. ft..
1¼@1¾c
2-18 Mesh, Galv. (8c. list) sq. ft...
2½@2¾c

Wire, Barb—See *Trade Report.*
Wire Rope—See *Rope, Wire.*
Wrenches—
Agricultural.....70c@10@75c@10%
Case lots.....75c@10%
Acme.....60c&10%
Alligator.....70%
Baxter's S.....60c&10%
Bull Dog.....70%
Bemis & Call's:
Adjustable S.....35&5%
Adjustable S Pipe.....40%
Brigg's Pattern.....30&10%
Combination Black.....40&5%
Combination Bright.....40%
Cylinder or Gas Pipe.....50%
Extra Heavy.....45%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....55%
Bindley Automatic.....30%
Boardman's.....33⅓%
Coes' Genuine.....40&10&5c&5%
Coes' "Mechanics".....40&10&10&5&5%
Donohue's Engineer.....40&10%
Eagle.....50&10%
Elgin Wrenches.....40%
Elgin Monkey Wrench Pipe Jaws...33⅓%
Gem Pocket.....30%
Hercules.....70%
Knife Handle, Machinists' (W. & B.):
Case lots.....50&10%
Less than case lots.....50&5%
Improved Pipe (W & B.).....6%
Solid Handles, P.S. & W.....50@50&10%
Triumph.....60&10%

Wrought Goods—
Staples, Hooks, &c., list March 17 '92.....90@90&10%

Yokes Neck—
Covert Saddlery Works, Trimmed.60&5%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—
Fort Madison's Farmers & Freighters'.. list net

Zinc—
Sheet.....*lb 6¼c@6¾c*

PAINTS, OILS AND COLORS—Wholesale Prices.

White Lead, Zinc, &c.
Lead, Foreign white, in Oil.. .. 7¼@ 9¾
Lead, American White, in Oil:
Lots of 500 ℔ or over..... .. @ 6¼
Lots less than 500 ℔..... .. @ 7
Lead, White, in oil, 25 ℔ tin pails, add to keg price..... .. @ ¼
Lead, White, in oil, 12½ ℔ tin pails, add to keg price..... .. @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.. .. @ 1½
Lead White, Dry in bbls..... 5¾@ 6
Lead, American. Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry.....℔ ℔ 4½@ 4¾
Zinc, Paris, Red Seal, dry..... .. @ 8¾
Zinc, Paris, Green Seal, dry..... .. @ 9¼
Zinc, Antwerp Red Seal, dry..... .. @ 6½
Zinc, Antwerp, Green Seal, dry .. @ 7¼
Zinc, V. M. French, in Poppy Oil, Green Seal:
Lots of 1 ton and over.....12 @12½
Lots of less than 1 ton.....12¼@12¾
Zinc, V. M French, in Poppy Oil, Red Seal:
Lots of 1 ton and over.....10¾@11¼
Lots of less than 1 ton.....11@11¾
DISCOUNTS.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors.
Black, Carbon.....℔ ℔ 8 @20
Black, Drop, Amer..... 4 @ 7
Black, Drop, Eug..... 7 @11
Black, Ivory.....12 @21
Lamp, Com..... 4½@ 6
Blue, Celestial.....℔ ℔ 4 @ 6
Blue, Chinese.....30 @35
Blue, Prussian.....28 @34
Blue, Ultramarine..... 4 @20
Brown, Spanish..... @ 1
Brown, Vandyke, Amer..... 1¾@ 2½
Brown, Vandyke, Foreign..... 2½@ 3½
Carmine, No. 40.....℔ ℔2.05@2.75
Green, Chrome, ordinary..... 5 @ 6½
Green, Chrome, pure.....16 @20
Lead, Red, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over..... @ 6
Lots less than 500 ℔..... @ 6½
Litharge, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over..... @ 6
Lots less than 500 ℔..... @ 6½
Ocher, French Washed..... 1¾@ 1¾
Ocher, Dutch Washed..... 4¾@ 5
Ocher, American....℔ ton $10.00@15.00
Orange Mineral, English..℔ ℔ 8½@11¼
Orange Mineral, French.....11 3-16@11¼
Orange Mineral, German..... 8½@ 9¼
Orange Mineral, American .... 8 @ 8¼
Red, Indian, English..... 4½@ 8½
Red, Indian, American..... 3 @ 3¼
Red, Turkey, English..... 4 @ 6
Red, Tuscan, English..... 7 @10
Red, Venetian, Amer.,℔ 100 ℔. 80@1.75
Red Venetian, English.℔100 ℔ 1.80@3.00
Sienna, Italian, Burnt and Powdered.....℔ ℔ 3½@ 7½
Sienna, Ital., Raw, Powd..... 3½@ 7½
Sienna, American, Raw..... 1½@ 2
Sienna, American, Burnt and Powdered.....℔ ℔ 1½@ 2
Talc, French.....℔ 100 ℔ $1.25 @1.50
Talc, American..... .90 @1.10
Terra Alba, French, ℔ 100 ℔ . 95 @1.00
Terra Alba, English..... .95 @1.00
Terra Alba, American No. 1....65 @85
Terra Alba, American No. 2....45 @50
Umber, Turkey, Bnt. & Pow.℔ ℔ 2½@ 3½
Umber, Turkey, Raw & Powd. 2½@ 3½
Umber, Bnt. Amer..... 1½@ 2
Umber, Raw, Amer..... 1½@ 2
Yellow, Chrome.....10½@25
Vermilion, American Lead.....10 @40
Vermilion, Quicksilver, bulk .. @70
Vermilion, Quicksilver, bags.... @71
Vermilion, English, Import...80 @95
Vermilion, Chinese.... . .$1.05@1.30

Colors in Oil.
Black, Lampblack..... 12 @14
Blue, Chinese..... .....36 @40
Blue, Prussian.....32 @36
Blue, Ultramarine.....13 @16
Brown, Vandyke..... 9½@13
Green, Chrome.....10 @12
Green, Paris..... @24
Sienna, Raw.....10 @13
Sienna, Burnt.....10 @13
Umber, Raw..... 9½@12
Umber, Burnt..... 9½@12

Miscellaneous.
Barytes, Foreign, ℔ ton....$19.00@21.00
Barytes, Amer. floated..... 19.00@20.00
Barytes, Crude, No. 1..... 9.00@10.00
Chalk, in bulk.....℔ ton 2.50@ 2.60
Chalk, in bbls.....@ 35
China Clay, English..℔ ton 12.00@17.50
Cobalt, Oxide.....℔ 100 ℔ 2.26@ 2.50
Whiting, Common. ℔ 100 ℔ .40@ .60
Whiting, Gilders..... .45½@ .65
Whiting, extra Gilders'.... .55@ .68

Putty.
In bladders.....$2.25
In bulk..... 1.25
In cans, 1 ℔ to 5 ℔..... 3.25
In cans 12 ℔ to 25 ℔..... 2.25

Spirits Turpentine.
In Southern bbls.....38 @38½c
In machine bbls.....38½@39 c

Glue.
Cabinet.....11½@16
Extra White.....18 @23
French.....12 @40
Irish.....13½@16
Low Grade.....℔ ℔ 9 @12
Medium White.....14½@16½

Animal, Fish and Vegetable Oils.
Linseed, City, raw.....℔ gal 63@66
Linseed, City, boiled..... 67 @68
Linseed, State and West'n, raw.65 @66
Linseed, raw Calcutta seed..... @85
Lard, Prime..... 76 @77
Lard, Extra No. 1..... 52 @54
Lard, No. 1..... 45 @46
Cotton-seed, Crude..... .. @ ..
Cotton-seed, Summer Yellow, prime..... 43 @44
Cotton-seed Summer Yellow, off grades..... 38½@39
Sperm, Crude..... @ ..
Sperm, Natural Spring..... 60 @61
Sperm, Bleached Spring..... 63 @65
Sperm, Natural Winter..... 61 @63
Sperm, Bleached Winter..... 66 @68
Tallow, Prime..... .. @57
Whale, Crude..... @ ..
Whale, Natural Winter..... 44 @46
Whale, Bleached Winter..... 46 @48
Menhaden, Crude, Sound..... 23 @24
Menhaden, Light Strained..... 29 @30
Menhaden, Bleached Winter... 31 @32
Menhaden, Ex Bleached Winter34 @35
Cocoanut, Ceylon..... 7 @ 7¾
Cocoanut, Cochin..... 8 @18
Cod, Domestic..... 30 @31
Cod, Newfoundland..... 34 @35
Red Elaine..... @42
Red Saponified.....℔ ℔ 6½@ 6¾
Olive, Italian, bbls..... 58 @ 61
Neatsfoot, prime..... 52 @53
Palm, prime, Lagos.....℔ ℔ 5½@ 6

Mineral Oils.
Black, 20 gravity, 25@30 cold test.....℔ gal. 9¾@ 10¼
Black, 29 gravity, 15 cold test. 10¾@ 11¾
Black, summer..... 9¼@ 9¾
Cylinder, light filtered..... 14½@17½
Cylinder, dark filtered..... 11¼@15½
Paraffine. 903-907 gravity..... 12¼@12¾
Paraffine, 903 gravity..... 11¼@11¾
Paraffine, 883 gravity..... 9¼@10
Paraffine, red, No. 1..... 12¾@12¾
In small lots ¼¢ advance.

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

OCTOBER 16, 1901.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ ₩ lb; Square, 0.8¢ ₩ lb
1 to 1⅛ in. round and square ..... } ₩ lb 1.85@1.95¢
1⅛ to 4 in. x ⅜ to 1 in..... }
Refined Iron:
1 to 1⅛ in. round and square..... } ₩ lb 1.90@2.00¢
1⅛ to 4 in. x ⅜ to 1 in..... }
1⅛ to 4 in. x ¼ to 5-16..... ₩ lb 2.05@2.15¢
Rods—⅝ and 11-16 round and square. ₩ lb 2.25@2.35¢

Angles:	Cts ₩ lb
3 in x ¼ in. and larger	2.30¢
3 to 3½ in. x 3-16 in	2.30¢
1¼ to 3 in. x ¼ in	2.30¢
1¼ to 2¾ in. x 3-16 in and thicker	2.10¢
1 to 1¼ in. x 3-16 in	2.20¢
1 to 1¼ x ⅜ in	2.30¢
⅞ x ¼ in	2.40¢
⅞ x ¼ in	2.50¢
⅝ x ¼ in	3.50¢
½ x 3-32 in	4.50¢
Tees:	
1 in	2.80¢
1¼ in	2.60¢
1½ in. and larger	2.50¢
Beams	2.50¢
Channels, 3 in. and larger	2.50¢
Bands—1¼ to 6 x 3-16 to No. 8	₩ lb 2.30¢
"Burden's Best" Iron, base price	₩ lb 3.15¢
Burden's "H. B. & S. Iron, base price	₩ lb 2.95¢
"Ulster"	₩ lb 3.60¢
Norway Bars	3.75@4.25¢
Norway Shapes	4.00@4.50¢

Merchant Steel from Store—

	per lb
Bessemer Machinery	1.90 to 1.95¢
Toe Calk, Tire and Sleigh Shoe	2.00@2.50¢
Best Cast Steel, base price in small lots	7½¢
Best Cast Steel Machinery, base price in small lots	8 ¢

Soft Steel Sheets—

¼ inch	2.20¢	No. 14	3.00¢
3-16 inch	2.30¢	No. 16	3.20¢
No. 8	2.40¢	No. 18	3.40¢
No. 10	2.60¢	No. 20	3.70¢
No. 12	2.90¢	No. 22	3.80¢

Sheet Iron from Store.

Black.

	One Pass, C. R. Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	₩ lb, 3.80	3.85¢
Nos. 18 to 21	₩ lb, 3.90	3.95¢
Nos. 22 to 24	₩ lb, 4.00	4.05¢
Nos. 25 and 26	₩ lb, 4.10	4.15¢
No. 27	₩ lb, 4.20	4.25¢
No. 28	₩ lb, 4.30	4.35¢

Russia, Planished, &c.

Genuine Russia, according to assortment ..... ₩ lb 11@11½¢
Patent Planished ..... ₩ lb A, 12¢; B, 11¢, net

Galvanized.

	B. B.
Nos. 10 to 16	₩ lb, 12¢
Nos. 17 to 21	₩ lb, 13¢
Nos. 22 to 24	₩ lb, 14¢
Nos. 25 to 26	₩ lb, 15¢
No. 27	₩ lb, 16¢
No. 28	₩ lb, 17¢
No. 29	₩ lb, 19¢
No. 30	₩ lb, 21¢

36 in. 1¢ ₩ lb higher.

Foreign Steel from Store—

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 18 @ 20 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 13 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12 ¢
R. Mushet's "Special"	₩ lb 46 ¢
" " " Annealed	₩ lb 75 ¢
" " "Titanic"	₩ lb 19 ¢
Hobson's Choice XX Extra Best	₩ lb 35 ¢
Jessop Self Hardening	₩ lb 45 ¢
Seamans' "Nelson" Steel	40 ¢
Hobson's "Soho" Special Self-Hardening	₩ lb 43 ¢

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free.	Per lb
Banca, Pigs	25½@25¼¢
Straits, Pigs	25¼@25⅛¢
Straits in Bars	26 @26¼¢

Tin Plates—

American Charcoal Plates.

Calland Grade:	
IC, 14 x 20	$7.75
IX, 14 x 20	9.25
Melyn Grade:	
IC, 14 x 20	7.25
IX, 14 x 20	8.75
Allaway Grade:	
IC, 14 x 20	6.75
IX, 14 x 20	7.85

American Coke Plates—Bessemer—

IC, 14 x 20 ..... 108 lb	$7.0 @7.15
IX, 14 x 20	$7.50@7.75

American Terne Plates—

IC, 20 x 28	$11.75@1.200
IX, 20 x 28	13.75@14.00

Tin Boiler Plates, American—

IXX, 14 x 28	112 sheets	$16.00
XX, 14 x 28	112 sheets	17.00
XX, 14 x 31	112 sheets	18.50

Copper—

Duty: Pig, Bar and Ingot and Old Copper free
Manufactured, 2½¢ ₩ lb.

Ingot—

Lake ..... 17¼@17⅜¢
Ansonia grade Casting ..... 16¾@17 ¢

Sheet and Bolt—

January 19, 1900. Net.

Prices, in cents per pound.
Sheet 30 x 60.

Not wider than	Not longer than	And longer than	¼ oz. & over, 50 lb. sheet, 30 x 60 and heavier.	20 oz. to 64oz. 25 to 50 lb.	24 oz. to 30 oz. 18¾ to 25 lb.	16 oz. to 24 oz. 12½ to 18¾ lb.	14 oz. and 15 oz. 11 to 12½ lb.	12 oz. and 13 oz. 9⅜ to 11 lb.	10 oz. and 11 oz. 7½ to 9⅜ lb.	8 oz. and 9 oz. 6¼ to 7½ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72	.....	21	21	21	21	23	23	24	27	30
30	96	72	21	21	21	21	23	24	27	30	
30	.....	96	21	21	21	21	23	27			
36	72	.....	21	21	21	21	23	25	28	31	
36	96	72	21	21	21	23	23	27	30		
36	120	96	21	21	21	23	24				
36	.....	120	21	21	22	23					
48	72	.....	21	21	22	23	25	28	31		
48	96	72	21	21	22	24	26	29			
48	120	96	21	21	23	25	29				
48	.....	120	21	22	24	27					
60	72	.....	21	22	22	24	27	32			
60	96	72	21	21	23	25	30				
60	120	96	21	22	24	27					
60	.....	120	21	23	25	29					
72	96	.....	21	22	24	29					
72	144	96	21	23	26	31					
72	.....	144	22	24	29						
108	120	.....	22	24	30						
108	.....	120	24	25							
wider than 108	144	.....	25	27							
	.....	144	26	29							

Rolled Round Copper, ⅜ inch diameter and over, ₩ lb 21¢.
Circles, Segments and Pattern Sheets, 3¢ ₩ lb advance over price of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 oz. ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper, 20 in. wide and under 1¢ ₩ lb advance over the price for Cold Rolled Copper.
All Polished Copper, over 20 in. wide, 2¢ ₩ lb advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₩ lb more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₩ lb	27¢
12 oz. and up to 14 oz. to square foot, ₩ lb	28¢
10 oz. and up to 12 oz., ₩ lb	29¢
Lighter than 10 oz., ₩ lb	31¢

Circles less than 8 in. diameter, 2¢ ₩ lb additional.
Circles over 13 in. diameter are not classed as Copper Bottoms.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.
List March 2, 1900.

Nos.	0000 to 8 Base	9 and 10		11 and 12
		½¢		½¢ ₩ lb adv.
Nos.	13	14	15	16
	½¢	¾¢	1¢	1½¢ ₩ lb adv.
Nos.	17	18	19	20
	1½¢	2¢	2½¢	2½¢ ₩ lb adv.

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.
Feb. 6, 1899. Net. Outside Diameter.

Stubs' W. G.	B. & S. W. G.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-11	3- 9	...	.....	.....	.....	33	31	30	29	28	27	25	24
12	10	...	.....	37	35	33	31	30	29	28	27	25	24
13	11	...	.....	37	35	33	31	30	29	28	27	25	24
14	12	...	41	37	35	33	31	30	29	28	27	25	24
15	13	...	42	38	36	33	32	31	30	30	28	26	25
16	14	...	43	39	37	34	33	32	31	30	29	26	25
17	15	...	44	41	38	35	34	33	32	31	30	27	26
18	16	61	46	42	39	36	35	34	33	32	30	28	27
19	17	60	47	43	40	37	36	35	34	33	32	30	29
20	18-19	64	49	44	41	39	38	37	36	35	34	32	31
21	20	66	51	46	43	41	40	39	38	37	36	35	34
22	21	71	56	48	44	42	41	40	39	38	37	37	36
23	22	76	62	50	46	44	43	42	41	40	39	39	39
24	23	81	66	53	48	46	45	44	43	41	40	40	41
25	24	88	71	56	51	49	47	46	45	43	43	44	45

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
36	32	29	27	21	21	21	21	21	21	21	23	23	25	27	28¢₩lb

Copper, Bronze or Gilding Tubes, 3¢ ₩ lb additional

Brazed Brass Tubing.

(*To No. 19, inclusive.*) Feb. 26 1896
Brown & Sharpe's gauge standard.

	Per ft.
Plain Round Tube, ¾ in. up to 2 in.	$0.35
" " " ⅝ " ¾ "	.36
" " " ½ " ⅝ "	.38
" " " ⅜ " ½ "	.41
" " 5-16 " ⅜ "	.48
" " ¼ " 5-16"	.65
" " 3-16 " ¼ "	1.00
" " ⅛ " 3-16"	1.50
Smaller than ¼ inch	Special
3 inch and larger	.40
Over 3 inch to 3½ inch, inclusive	.45
Over 3½ inch	.50

Bronze and Copper, advance on Brass List, 3 cents.
Discount from list ⅝ 35%

Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

Common High Brass. Wider than and including	in. 2 / 12	in. 12 / 14	in. 14 / 16	in. 16 / 18	in. 18 / 20	in. 20 / 22	in. 22 / 24	in. 24 / 26
To No. 20, inclusive	.22	.23	.25	.27	.29	.31	.33	.36
Nos. 21, 22, 23 and 24	.22	.24	.26	.28	.30	.32	.34	.37
Nos. 25 and 26	.23	.24½	.27	.29	.31	.33	.35	.38
Nos. 27 and 28	.23	.25	.28	.30	.32	.34	.36	.39
Common High Brass. Wider than and including	in. 26 / 28	in. 28 / 30	in. 30 / 32	in. 32 / 34	in. 34 / 36	in. 36 / 38	in. 38 / 40	in. 40
To No. 20, inclusive	.39	.42	.46	.50	.55	.60	.65	*
Nos. 21, 22, 23 and 24	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28	.42	.45	.49	.53	.58	.65	.73	

* Special prices not less than 80 cents.
Add ½¢ ₩ lb additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List 20%

Wire in Coils.

List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gilt for bronze and copper
All Nos. to No. 10, inclusive	$0.23	$0.27	$0.28
Above No. 10 to No. 16	.23½	.27½	.28½
No. 17 and No. 18	.24	.28	.32
No. 19 and No. 20	.25	.29	.33
No. 21	.26	.30	.34
No. 22	.27	.31	.35
No. 23	.28	.32	.36
No. 24	.30	.34	.38
No. 25	.32	.36	.40
No. 26	.35	.39	.43
No. 27	.38	.42	.46
No. 28	.42	.46	.51
No. 29	.45	.49	.54
No. 30	.48	.52	.62
No. 31	.51	.55	.67
No. 32	.55	.59	.73
No. 33	.59	.63	.82
No. 34	.64	.68	.95
No. 35	.70	.74	1.30
No. 36	.76	.80	1.50
No. 37	1.00	1.04	1.70
No. 38	1.30	1.34	2.00
No. 39	2.00	2.00	3.25
No. 40	2.60	2.60	5.75

Discount, Brass Wire, 20%; Copper Wire, Nat. List November 16, 96.
Spring Wire, 2¢ ₩ lb advance.

Tobin Bronze—

Straight, but not turned, Rods, ⅝ to 3 in. diameter, ₩ lb, net ..... 30¢
Finished Piston Rods, ⅝ to 2½ in. diameter, ₩ lb net ..... 21¢
Other sizes and extreme lengths, special prices.

Spelter—

Duty: In Blocks or Pigs, 1¢ ₩ lb

Western Spelter	4½@4.60¢

Zinc.

Duty: Sheet, 2¢ ₩ lb.

600 lb casks ..... 6¾¢	Per lb ..... 7¾¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American Pig	4.62½@4.75¢
Bar	5½@5¾¢
Pipe	6¾¢ ..... 20% off
Tin Lined Pipe	12½¢ ..... 20% off
Block Tin Pipe	37½¢ ..... 20% off
Sheet Lead, full rolls	7¼¢ ..... 20% off
Sheet Lead, cut	7¾¢ ..... 20% off
Old Lead in exchange, 4¢ ₩ lb.	

Solder.

½ & ¼ guaranteed	17¾@18 ¢
No. 1	14 @16 ¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₩ lb.

Cookson	₩ lb 10½@11¢
Hallett's	₩ lb 8½@9¼¢
U. S.	₩ lb 8½@9 ¢

Aluminum—

Duty: Crude, 8¢ ₩ lb. Plates, Sheets, Bars and Rods, 13¢ ₩ lb.

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:

Small lots	₩ lb 37¢
100-lb lots	₩ lb 35¢

No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:

Small lots	₩ lb 34¢
100-lb lots	₩ lb 33¢

Aluminum Sheet, B. & S. gauge. 50 lb or more.

Wider than ..... 6-in.	14-in.	24-in.
And including ..... 14-in.	24-in.	30-in.
	₩ lb.	₩ lb. ₩ lb.
Nos. 13 to 19	$0.42	$0.44 $0.47
No. 20	.44	.46 .49
Nos. 21 to 23	.46	.48 .51
No. 24	.48	.50 .53
No. 25	.47	.51 .54
No. 26	.47	.54 .59
No. 27	.48	.57 .62
No. 28	.48	.57 .64
No. 29	.49	.60 .69
No. 30	.50	.64 .77

Note.—Lots of less than 50 lb 5¢ ₩ lb extra.

Aluminum Wire, B. & S. Gauge.

Larger than No. 9	₩ lb 40¢	No. 15	₩ lb 43¢
No. 9 to No. 10	₩ lb 40½¢	No. 17	₩ lb 50¢
No. 11	₩ lb 41 ¢	No. 18	₩ lb 55¢
No. 12	₩ lb 41½¢	No. 19	₩ lb 60¢
No. 13	₩ lb 42 ¢	No. 20	₩ lb 65¢
No. 14	₩ lb 43½¢	No. 21	₩ lb 85¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper	₩ lb 14½ ¢
Light and Tinned Copper	₩ lb 12½ ¢
Heavy Brass	₩ lb 9½ ¢
Light Brass	₩ lb 7½ ¢
Lead	₩ lb 4 ¢
Tea Lead	₩ lb 3½¢
Zinc	₩ lb 2½¢
No. 1 Pewter	₩ lb 17½¢
No. 2 Pewter	₩ lb 15½¢
Tin Plate scrap	₩ ton $8.00
Wrought Scrap Iron	₩ gross ton $10.50@11.00
Heavy Cast Scrap	₩ gross ton $10.25@10.50
Stove Plate Scrap	₩ gross ton $7.25@7.50
Burnt Iron	₩ gross ton $5.00@5.50